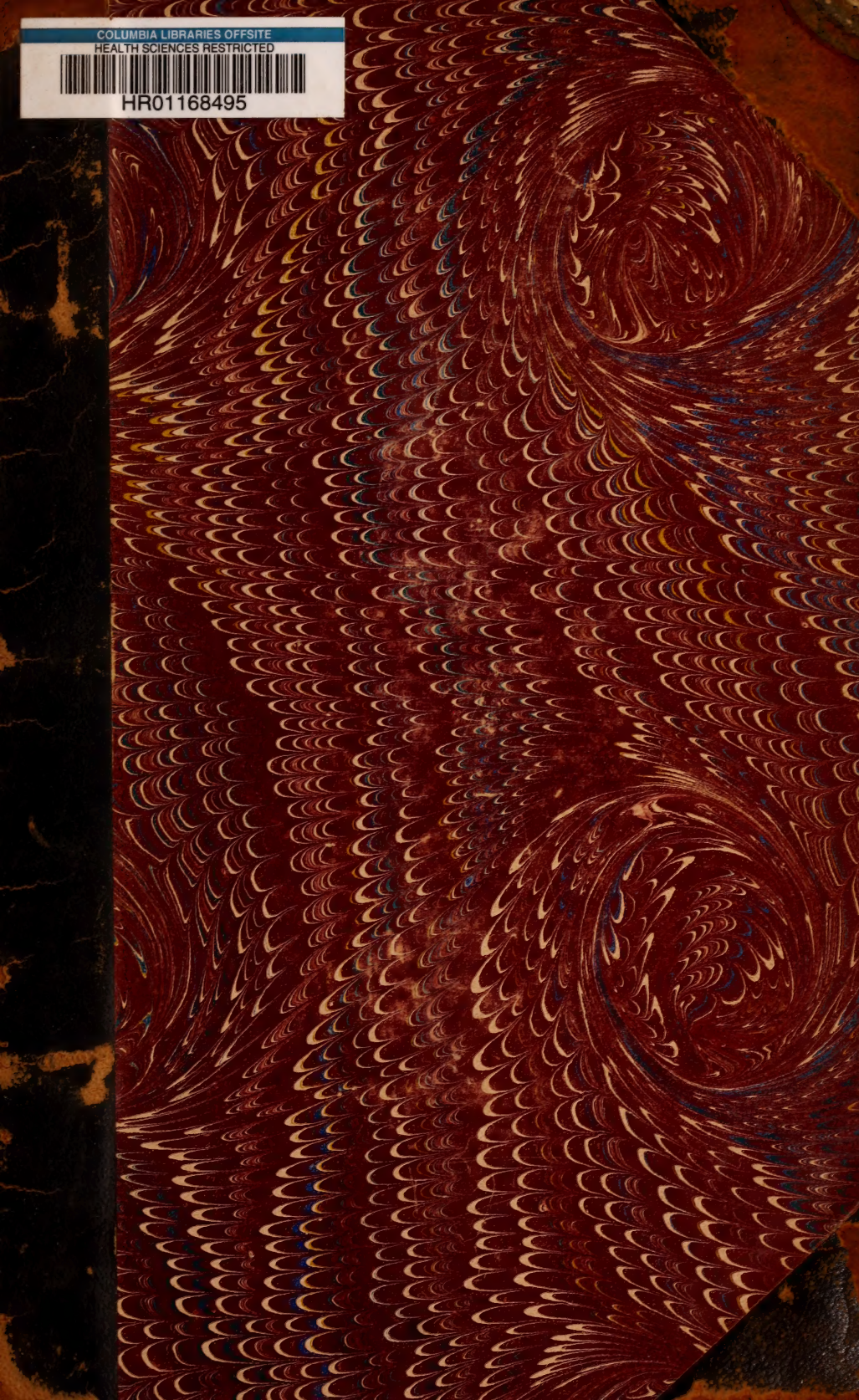


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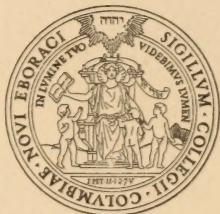
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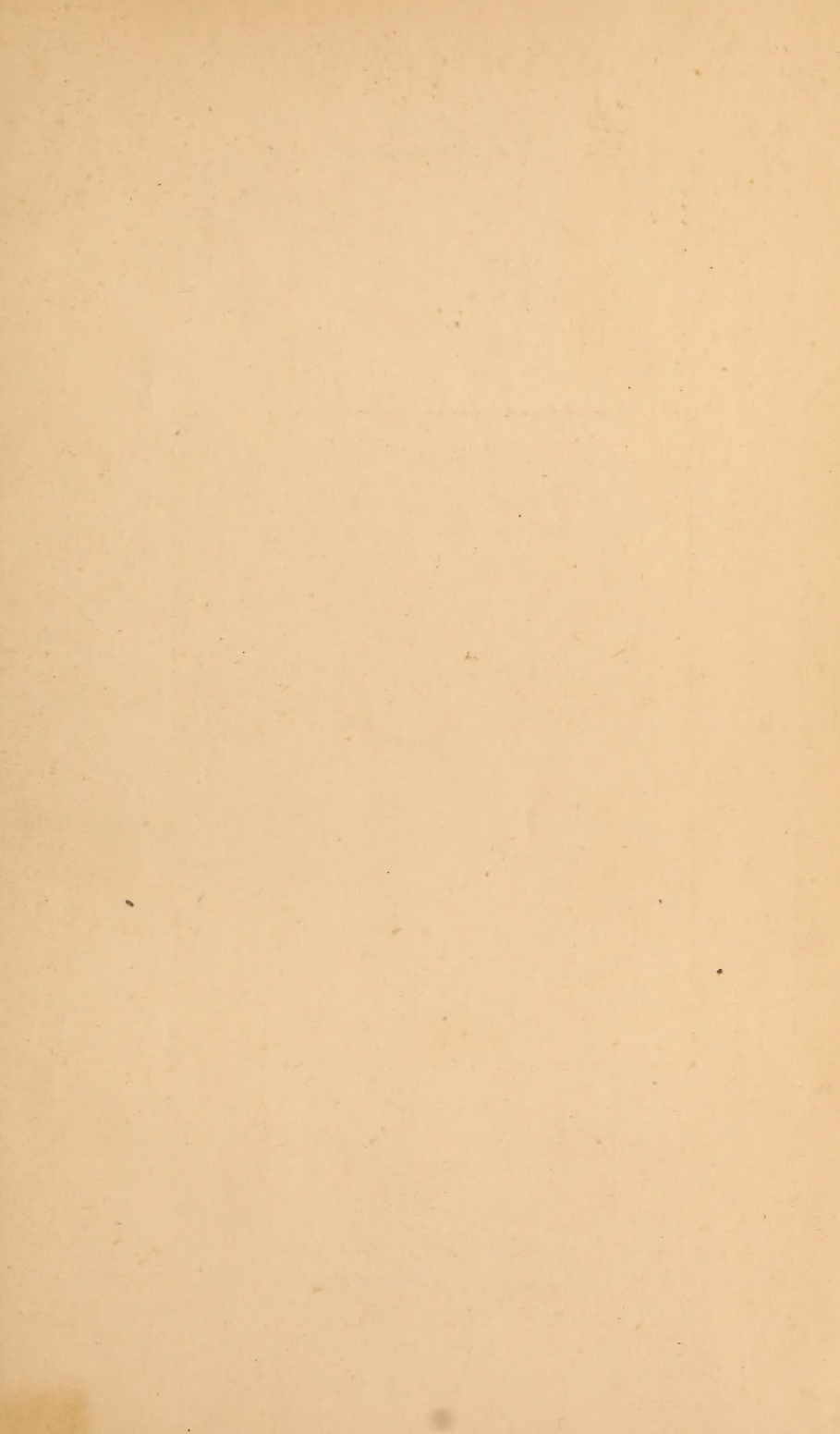
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THE
OHIO
DENTAL JOURNAL

EDITED BY
L. P. BETHEL, M. D., D. D. S.,
KENT, OHIO.

VOL. XVI.

PUBLISHED MONTHLY BY
THE RANSOM & RANDOLPH CO..
TOLEDO, OHIO.

PRESS OF THE
ANDREWS-JONES PRINTING COMPANY,
TOLEDO, OHIO.

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AFTERMATH,

264—312—512—616.

THE OHIO DENTAL JOURNAL.

VOL. XVI.

JANUARY, 1896.

No. 1.

CONTRIBUTIONS.

Porcelain Bridge-Work.—Some Cases on Record.

BY E. PARMLY BROWN, D.D.S., NEW YORK.

PORCELAIN dentures in the form of bridge-work, having had a thorough test for more than ten years, are now receiving the endorsement of dentists the world over.

It is my purpose in this paper to describe and illustrate a few of the extensive cases that have been placed on record from time to time, either by being noticed in dental journals or other publications or by being shown at large clinics. Thus the cases here cited will be especially interesting to those who have examined them or read of them, but have had no opportunity to learn how successful they have proved.

Dentists all over the world have at once adopted this porcelain bridge-work when they have seen a few of these successful cases, and have so been convinced of the superiority of the system. The people prefer it always when made acquainted with its many advantages. With either a single tooth or a full set there is no metal in sight, and the lost teeth and the absorbed alveolar ridge can be restored to perfection. The system covers the entire ground of bridge substitution, from a single bridge

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tooth anchored to an approximal living tooth with a filling, to a full denture anchored to two or more living teeth or dead roots, with all the intermediate cases that are required; and in nearly all cases, sound pier-teeth can be saved alive by fillings. Choice can be made of seven different forms of construction and attachment for both removable and fixed dentures, all composed entirely of iridio-platinum and porcelain.

Thirteen years ago I began baking strong platinum pins in pivot-teeth and experimenting with platinum caps baked on these teeth to protect the end of roots. Over ten years ago I cautiously began inserting porcelain bridges of one or more teeth, until in two years' time, encouraged by the success of the operations, I ventured upon full upper cases. For the first few years these were baked on iridio-platinum bars, the cervical portion of the teeth slightly touching upon the gum; and as time showed a perfectly healthy condition around these bridges, more support was obtained from the gum by resting the teeth firmly against it. The result was the discovery that a non-corrosive, non-oxidizable material like porcelain or platinum can be placed firmly in contact with the gum without microbic colonization and consequent disease. The system was perfected by the use of stiff iridio-platinum plate as the base to rest upon the gum.

All the following cases have been exhibited at various times since the date of their insertion, and therefore a large number of dentists can vouch for the history of the same as here given.

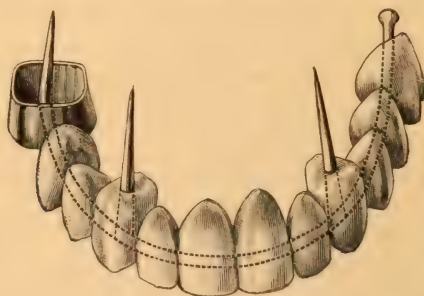


Fig. 1.

Case I, Fig. 1,—shown in Evan's "Crown and Bridge Work," Fig. 519—is an upper bridge of eleven teeth baked in the original experimental way, on a platinum bar only; inserted for a lady as a temporary denture, to be worn three years; attached to cuspid

roots by porcelain crowns without caps, and to one molar by a filling and by a gold crown to the other. This case was worn over seven years, when one cuspid root split and was removed. It is now replaced by a bridge constructed on the improved plan, Figs. 2 and 3,

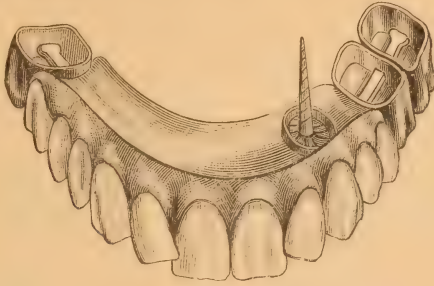


Fig. 2.

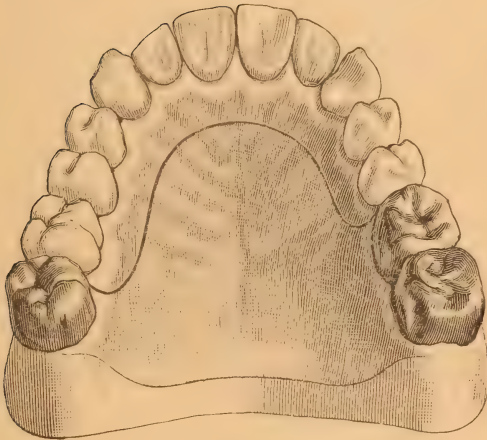


Fig. 3.

with iridio-platinum plate resting firmly on the gum; anchored by a porcelain crown on cuspid root and three gold crowns on molars,—the porcelain crown having platinum cap as well as pin. and the gum being restored where required.

Case II, Figs. 4 and 5,—shown in Evan's Work, Fig. 525—is of seven teeth in lower jaw, only five of which are here illustrated, the bicuspid bridges on either side of the mouth being exactly similar, anchored into live teeth with gold fillings placed under and around the iridio-platinum bars extending from the bridges. Dr. Evans saw this case when first done and also five

years later. After more than seven years' wear, no bridge has broken nor any filling failed; but as it was an especially risky case, on account of the great leverage brought to bear upon the natural pier-teeth, it was feared that some of the nearly exposed pulps might be lost. And two of them were lost, but they were removed without interfering with the bridges. The three incisors replaced the loss of four.

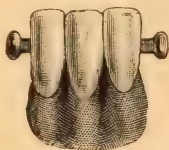


Fig. 4.



Fig. 5.

Case III, Fig. 6, is a full upper denture attached to five anterior roots, without capping. It was inserted as a temporary case, immediately after extracting several useless roots, but it has now given entire satisfaction for over five years. The lady wearing it has exhibited it on many occasions.

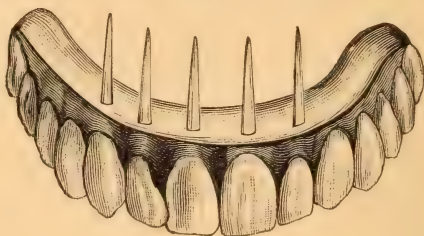


Fig. 6.

Case IV, Fig. 7, is of eight bridge-teeth in upper jaw, with two gold crowns on third molars. The laterals and three bicuspsids on either side are anchored by gold fillings in living centrals and cuspids, with the exception of one bicuspid, which is a porcelain crown. Bridges all perfect after seven years' service. Like all improved porcelain bridges, they rest firmly on the gum, which has always kept perfectly healthy, with no absorption whatever. The patient, a lady, exhibited the work at the Anniversary clinic, 1st District Dental Society, New York, six years ago, and also before the same society one year ago. It was examined latterly by Prof. Goddard, of San Francisco, and Dr. T. H. Williams of Fort Sill, Oklahoma, and the patient said to them that one of the beauties of the work was that since the bridges

were inserted seven years ago, she had never realized that anything was in her mouth but natural teeth. This is a very interesting case and will be reported upon in time to come. The loss of the eight molars and bicuspid resulted from wearing clasp plates to insert the laterals which never erupted.

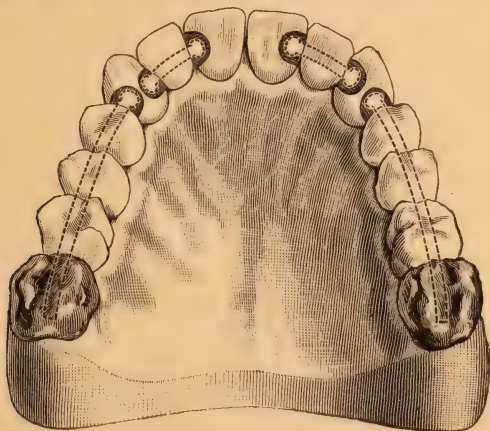


Fig. 7.

Bridge-workers admit that fixed dentures can be successfully attached to root-piers or gold crowns, but most of them have doubted the probability of the success of cases anchored in fillings. The cases here cited must dispell such doubts. A perfect system of tooth displacement must include the salvation of many teeth that can be utilized as piers for bridges by using fillings as the attachments. I will cite a few more cases in point.

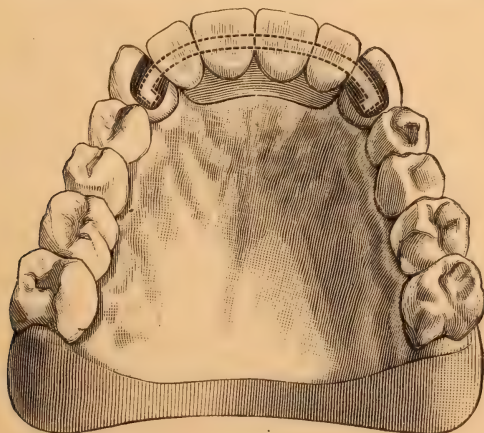


Fig. 8.

Case V, Fig. 8, was for a college student who lost the four superior incisors by an accident at the end of his first collegiate year. The cuspids were perfect, and as he did not wish to wear a plate, I inserted four teeth on a porcelain bridge, anchoring the iridio-platinum bar in gold fillings, in cavities cut for the purpose on palatine sides of cuspids, keeping nerves alive. The patient finished college, wearing case three years as expected. Then I removed the case by cutting the gold from around the bars and restored the absorbed gum on permanent case, resting the iridio-platinum plate firmly on the gum and anchoring some deeper than in the first instance, but still preserving the pulps alive. When last seen, seven years after the first case was inserted, the gums were healthy, pulps alive and all perfect.

Case VI, not illustrated here, but shown in Evans' Book, Fig. 522, is a bridge of two superior bicuspids inserted by Dr. F. P. Hamlet, for a lady patient. Exhibited at clinic recently after having been worn nine years without accident.

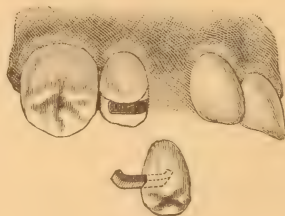


Fig. 9.

Case VII, Fig. 9,—shown in Evans' Book, Fig. 523,—is a single first bicuspid, inserted by the writer in Dr. F. P. Hamlet's mouth, anchored with a gold filling in second bicuspid only. It has now done service for eight years.

These cases have not been selected as the most successful among the thousands inserted; but because they became a matter of record in past years.

Accidents have of course happened during the infancy of the art, as the result of poor baking, imperfect anchorage, etc.

A pamphlet soon to be issued with many illustrations, will treat of the different ways of making porcelain crowns and bridges, as perfected up to date.

Removable porcelain bridge-work, adapted to a large variety of cases, will be exhibited after the three modes of construction

now used have been given the test of time in practical cases.

The late improvements in furnaces and ovens for baking porcelain, such as electrical, gas and oil, bring the art within reach of all.

Those who have given this system a fair test, pronounce it the bridge-work *par excellence*. Dr. L. P. Haskell, the great authority on Prosthetic Dentistry, calls it "the most perfect system ever devised;" and Dr. Geo. Evans, in his "Crown and Bridge Work," says: "For an ideal piece of bridge-work, that will dispense with the objectionable features of a permanently attached denture and refute the most forcible arguments against the system, porcelain is the most suitable material known. Its cleanliness, due to the unalterable character of the materials of which it is composed, and the continuity of its surface, renders it a superior denture."

Water Rheostat for Controlling Electrical Appliances.*

BY L. E. CUSTER, B.S., D.D.S., DAYTON, O.

OFTENTIMES the simple things are overlooked and preference is given to complicated appliances for no other reason than that there seems to be virtue in complication. We will here call attention to an old and overlooked device which may be used for the regulation of electrical appliances which is not only simple in construction but is cheap and effective, and unlike most other instruments can be suited to all kinds of work.

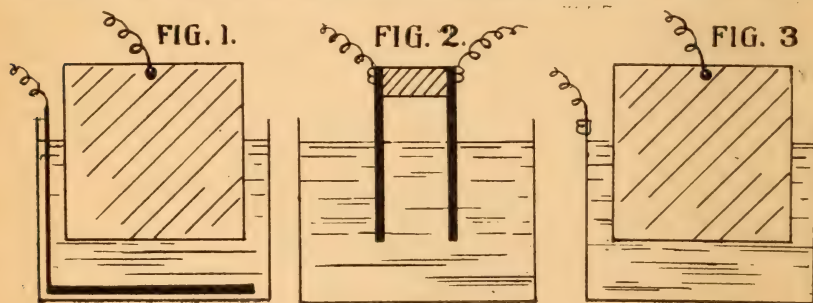
The rheostat is an appliance used for the regulation of electric devices and holds the same position in electricity that the valve does in hydraulics. It is simply a compact resistance to the flow of the current with a ready means of cutting out more or less of the resistance by means of a lever. According as the resistance is cut out or lessened, we have an increase in the flow of the current and the instrument under operation increases its action.

The resistance material in most rheostats is of wire. It may seem strange that the very means by which electricity is carried

* Read before the Ohio State Dental Society, December, 1895.

to us should be used for regulating the quantity which we use. But this has always been the problem with electricians—to conduct electricity without resistance. All metals while conductors offer more or less resistance to the free flow of the fluid. A large wire offers less resistance than a small one and so we find the wires entering our office of large cross section whereby we get a full amount of current, while the wires in the rheostat are quite small or of a material having high electrical resistance.

A problem met with in the construction of wire rheostats is the heat. When the current meets with resistance it produces heat according to the quantity of current flowing and the resistance offered by the wire or conductor so that the ready radiation of the heat is the principal feature of all resistance boxes. The



greater the facility for heat radiation, the smaller can be the appliance.

The form to which I now call your attention is the water rheostat or the use of pure or somewhat aciduated water as a resistance to the flow of the electric current. Water is itself a poor conductor of electricity, but the ease with which its conductivity can be increased and the flexibility of the appliance, both for resistance and quantity recommends it. The appliance is simply a vessel filled with water having a metal plate resting upon the bottom, and, by any convenient arrangement, another plate is dipped in the water. One wire is attached to the plate on the bottom and the other wire to the suspended plate, Fig. 1.

In the practical application of this appliance, the plate is lowered into the water, upon touching which the circuit is closed and the current flows from one plate to the other through the water. At the surface of the water but little current is able to flow, but as the plate sinks deeper the current increases in quan-

tity till the bottom plate is touched, where the current flows through the metal and the full current is on.

The appliance just described is not the only form of water rheostat. Both plates may be held together, but electrically insulated, and lowered into the water till they touch a metal bottom. Fig. 2. Or the vessel itself may be of metal with one wire attached to it and the other wire to the movable plate Fig. 3.

A water rheostat possesses a property not met with in others. It can in a moment's time be arranged to give a large quantity at low voltage, or a small quantity at high voltage. The resistance is varied in three ways; first by increasing the plate surface in the water; second, by varying the distance between the plates; and third, by acidulating the water. When the plate surface is increased it is the same as enlarging the cross section of a metal conductor. The resistance of wire increases as its cross section decreases. The deeper the plates are immersed in the fluid the greater is the surface they present, so that the resistance decreases with the depth of the immersion and the operator has only to lower or raise the plates to increase or decrease the quantity of current. By this he manipulates the amperes more than the volts and since heat in electricity depends upon the quantity or amperes such an arrangement is best fitted for all heating appliances.

By the second method, varying the distance between the two plates, we do the same thing as lengthening or shortening a wire which conducts electricity. The resistance is greatest when the plates are far apart and decreases as they approach. By this arrangement the operator manipulates the volts more than the amperes, or in common terms the pressure more than the quantity. For this reason, a water rheostat whose plates are movable to and from one another is applicable in using a low volt instrument on a high pressure current.

The third means of varying the current is by acidulating the water. Pure water is a poor conductor of electricity compared with the metals, but by adding an acid to it, it becomes a good conductor. 9% acid increases the conductivity of the fluid about 25%. It is not practical however, to increase the acidity as a means of regulating, but by using the acid a rheostat of large capacity can be made from one of small capacity.

Without going any deeper into this phase of the subject I

would say that a vessel holding a pint of water would be large enough to regulate a dental motor, a mouth lamp, mallet or gold annealer and one of a gallon capacity would be sufficient for melting platinum, operating the cautery or electric oven. It should be made so that the plate or plates can be let into the water by steps just as the wire rheostat is operated by passing from button to button. This can be done by suspending the plates on a pulley or by a succession of notches as I show here.

The water rheostat unlike most others, is capable of very fine adjustment, since the current is increased by lowering the plates into the water, if this operation is done by a screw it will give as close gradations for cataphoresis as can be obtained by expensive ones for this purpose. Another advantage over all other forms is that it is fire proof. There is no spark upon breaking the current and there are no contact buttons to corrode. The contact between the water and metal is always good.

The instrument can be easily made, is inexpensive, and requires no attention but an occasional addition of a little water.

Implantation of Tubed Tooth.*

BY J. B. SNYDER, D.D.S., BRYAN, O.

I HAVE always been interested in implantation of roots of teeth, and since Dr. Bonwill's clinic in January, before the First District Dental Society, of New York, I have been experimenting along the lines hinted at in the report of the clinic mentioned.

This method is intended to restore teeth (our operations have been on single teeth thus far,) in any part of the mouth where plate or bridge work is objectionable.

The mutilation of good teeth for bridge purposes is reprehensible practice, and many persons absolutely refuse to have their teeth sacrificed for a doubtful operation such as bridge-work affords.

The work briefly stated is to select a suitable J. & L. removable pin crown, this tooth seems to be the best one for the purpose, it having a straight removable pin. Make a tube of 22k.

* Read at Ohio State Dental Society, Dec., 1895.

gold to fit the post and large enough to carry the tooth, the larger, the better; close one end and put a narrow flange on it. In most cases the tube can be left one-half inch long. With a trephine that corresponds to the largest diameter of the post, an opening of proper depth is made in the jaw, and the post and properly ground and articulated tooth is implanted and cemented in place, to remain six or more weeks or until ankylosis takes place.

A good deal of trouble was experienced in holding the implanted tooth immovable in the jaw, and unless that part of the work is done perfectly, the post never becomes fixed in the process. Those recently placed have been held securely by a yoke encircling the crown and the teeth on each side. From an æsthetic point of view this tooth is an ideal one, no gold or other metal being in sight.

I will leave the interesting question of how the post is held in place with you; will it become fixed in the jaw and is it practical? The case we present for your inspection was implanted October 5, '95.

DISCUSSION.

H. Bartilson said he did not think that the operation would be a success. For all the crown seemed firm at the present time, he believed that it was only a matter of time when the force exerted against the crown would cause absorption or necrosis of the process about the implanted tube. He did not think the tube was held in place by ankylosis but rather by endostosis.

H. A. Smith called attention to a similar operation described several years ago, where tubes were screwed into the lower jaw for the purpose of holding a lower plate. He spoke of continuous gum teeth having been implanted and becoming firmly attached, but eventually absorption had occurred. The attachment in this case must be similar, and he thought that it was only a matter of time until absorption would occur. He spoke about tissues tolerating lead, but did not think it would be apt to be come encysted in bony tissue.

H. Barnes said that Dr. Berry had years ago advocated the implantation of teeth with lead roots, but he had not heard whether the results were successful.

J. Taft said: This is so contrary to our past experience in

this direction that he was afraid it would not prove a success. This material being entirely foreign to the tissues, the only means of attachment would be a sort of encystment or scar tissue and the result would be only temporary, although it might be tolerated for some time where the person was in vigorous health. He would rather suggest a bone pin, as plasma would be thrown out against it and tissue built around it.

H. L. Ambler said he had seen various accounts of bullets becoming encysted in bony tusks. He thought such an operation as this was not safe where the tooth had been gone several years or in an edentulous jaw, for there was danger of perforating the antrum or nares.

J. B. Snyder said he did not know any more about what the outcome would be than the gentlemen who had spoken; time alone could tell that. He had presented the subject, by request, that the profession might see what could be accomplished along this line.

Photography in Dentistry and Medicine.

BY DR. M. G. JENISON, MINNEAPOLIS, MINN.

WHEN we consider the part pictures have played in the history of the world, the facts we meet are most astonishing. Many of the earlier races have handed down to us in this manner their interesting stories that would otherwise have been unknown.

Ancient history is thus preserved, and many savage races still employ rude sketches as their only means of record and communication except the oral or traditional. In our modern life what dreariness or desolation would be wrought, if all pictures other than paintings were put out of existence. But my purpose at the present time is only to show some of the means by which we apply photography in our professional work and occupations, for with the changes and progress in this art during recent years, the use of the camera is brought within the use of all; at the same time photography as a science has deepened and widened. The production of the so called dry plates has placed much of the chemical part of photography in the factory, thus enabling the amateur to produce pictures, many of which equal the work of

the professional artist. Properly pursued, even as a pastime, amateur photography will do much to develop an artistic sentiment, by stimulating study of light and shade, of proper selection and grouping, and a quick perception of what will make an artistic picture. With the brush or pencil few have the ability to correctly copy what they may desire, but with the camera, all may quickly and accurately do so.

Much of this amateur work is justly considered mere pastime, yet it opens a field that is of great value and can be made a still greater, although in this limited consideration of it we may pass partly out of the realm of amateur work, or at least into its higher grades.

The extremely sensitive plate which will take a correct impression of any object in the sixtieth part of a second, or even quicker, has revealed to us many of the muscular actions with perfect accuracy, they giving us our only knowledge of the various positions of muscles in action. On this subject some very pleasing and valuable magazine articles have already been published and a series of fine plates prepared. By this method all the forms of animal motion can be accurately studied. The flying bird or the speeding horse can be taken instantly and correctly. The various phases of the moon and stars can be preserved for study more accurately with the camera, than by the pencil of the astronomer. Attempts have been made to photograph in systematic and scientific form the entire heavens for astronomical uses. In this work some pictures were obtained showing facts hitherto unobserved. This much has already been done in astronomy and it is natural to suppose that the end is not reached. In everyday life we see in various ways the power of illustrations. Pictures can be comprehended by all, while valuable printed matter and much that falls from the lips of the speaker or teacher is wasted. In political or public life nothing will kill a man as quickly as the illustrated papers.

In dentistry, surgery and medicine, we lose much that is valuable by imperfect records or no records at all. Diagrams and models have their proper sphere, but are too many times conspicuous by their absence or imperfection, and the brain of the professional man does not always prove a good storehouse for this fund of material, so valuable to others, or if it does retain it, his tongue never acts as the key to open it for his brothers. The

desirability for full and more complete records can hardly be questioned, neither can the use of the camera as an auxiliary in this work. Strange as it may seem the professional photographer will seldom, if ever, take these technical pictures in the manner we want them. He does not understand what we desire and is almost sure to leave out the essential points. While the amateur, with a reasonable degree of skill, though he may not produce quite so pretty a picture, is much more likely to obtain that which will be of value from a scientific point of view. If our camera is convenient in our office, five or ten minutes will give us a correct copy of a model or appliance, or of some abnormal or pathological condition of the patient. Many valuable surgical operations can be shown by this means in all the various stages from commencement to completion. In dentistry, one of the valuable points to be considered, is the outlines of the face in cases of irregularity, to illustrate correctly various changes that occur, which otherwise could not be shown or demonstrated. These in conjunction with models, would often do much to satisfy patients in regard to fee bills, and save us more in well-earned dollars, than all we may have expended in this method of recording.

In the study of art in dentistry, we find another useful field for photography. We can collect and preserve an innumerable number of faces, showing the various expressions in the region of the mouth, having in conjunction with them, a copy of the conditions of the part, or of the artificial substitute, showing all the different expressions with a correctness and facility which it would be difficult to do with the pencil, for the accuracy of man's drawing is always open to question, while that of sunlight is not. The thoughts in the valuable papers furnished by Dr. Hunt on Dental Art could by these means be enlarged and extended. A very convenient and practical method of retaining and arranging these pictures for everyday use is furnished by the blank albums manufactured for this purpose.

In these they could be systematically arranged, so that when desiring to explain any part of them to our patients we can turn instantly to the point to be demonstrated. Thus we can preserve our cases of oral surgery; cases of irregularity in all the various periods of the operation, and in connection with them, keep any form of appliance that we may wish to retain or explain, and have all in this convenient shape for use. The writer, in prepar-

ing an illustrated article, can send to the publishers an absolutely correct copy of what he wishes to demonstrate. The value of this alone, I think, would improve very greatly if more extensively employed. A person reading an essay before a society could use photographs or enlargements of them, showing quickly and clearly to the audience, the points to be explained.

In struggling with the difficulty of educating our patients, we can by systematic arrangement, of a greater or less number of carefully prepared pictures, quickly bring rays of knowledge to their minds that would not otherwise reach them.

Many instruments, operations, pathological and histological conditions, etc., can be more clearly and accurately shown by photography than in any other way. By their use the teacher may save many words.

The value of photomicrography has been ably demonstrated by Prof. Sudduth and others. The superiority of slides prepared in this manner, over drawings, lies in their absolute correctness.

What the world is striving for is facts in the most condensed form possible, and the more we can condense scientific knowledge the more of it will be received and assimilated.

In presenting in this incomplete paper a few of the many features this subject could unfold, my thought has been to emphasize the value of illustration in records and in teaching, and to briefly show some of the many possibilities that are open to us through the aid of the camera.

Best Investing Material.

BY GEO. EVANS, NEW YORK.

I NOTICE in the November issue of your journal, the query answered as to what is "The best Investing Material," (page 509).

My answer to that would be—For single crowns or very small investments, 2 parts calcined marble dust and 1 of plaster. For large investments, including pieces of bridge-work: 1 part calcined marble dust, 1 part common white sand and 1 part plaster. The reason for the use of the latter proportions is, the sand prevents the excessive contraction that is liable to take place in large masses of investing material entirely composed of plaster

and marble dust when subjected to great heat for considerable time.

The marble dust in combination with sand renders the material more suitable to fill interstices and inside of caps. In cases of bridge-work of any great size, a loop of iron wire should encircle the piece in the investment.

The Pathology of Inflammation.

BY GEORGE EDWIN HUNT, INDIANAPOLIS.

Continued from page 626, Dec., 1895.

INFLAMMATIONS are divided by the pathologist into serous-fibrinous, productive and suppurative. In the serous the exuded fluid is a little more albuminous than normal, but there are few if any leucocytes in it. In this form there is but little tendency to coagulation of the exudate.

If the irritation persists, the percentage of albumen, fibrinogen, and white corpuscles is raised, and fibrin flakes form in various parts of the tissue. This stage is known as the sero-fibrinous form and leads on to the next, or fibrinous form of inflammation, in which the exudate is more richly albuminous and contains more leucocytes. There is a greater tendency to coagulate and "lymph" forms in the inflamed area.

From the fibrinous stage an inflammation may become productive, or it may pass on to the suppurative form, afterward becoming productive. Productive inflammations are those in which new tissue is formed; and without productive inflammation repair of wounds and restoration of lost tissue could not take place.

In productive inflammation, the glairy, mucus like lymph, which glazes the bottom and sides of the wound, becomes closely packed with leucocytes which have previously exuded from adjoining capillaries. Into this leucocyte crowded matrix, spring little fibrillous capillaries—offshoots of neighboring vessels—which, after penetrating the lymph, to the free surface of the wound, form a loop, turning back into the lymph and anastomosing with either the parent vessel or perhaps another new capillary.

The leucocytes quickly gather round these capillary loops, for it is from the blood circulating in them that sustenance for this new tissue must be derived. This tissue is now known as granulation tissue.

More lymph is now formed by the exudate from these new capillaries. This in turn becomes crowded with leucocytes, and is penetrated by still newer capillaries, and the process is thus continued until the lost tissue is restored. The leucocytes develop into fibrous cells and the new tissue thus formed becomes fibrous connective tissue. It is popularly known as inflammatory or scar tissue. Scar tissue is an inferior grade of tissue. It is always more susceptible to irritant effects and is prone to break down under influences that would cause but a trifling disturbance in the normal tissue which it has displaced.

If the action of the irritant is intense and prolonged, suppurative, instead of productive inflammation, may follow the fibrinous form. Suppurative inflammation is almost always due to the presence in and action on the tissues, of certain bacteria, most commonly the staphylococcus pyogenes aureus. A form of suppurative inflammation may be induced by the action of certain chemical irritants injected into the tissue. The pus resulting from this irritation is free from bacteria, bland, and non-infectious. Pus resulting from the presence of bacteria is infectious, poisonous, and has a characteristic offensive odor.

If in suppurative inflammation the irritation is of small degree, but persistent; if the depression of vital activity and consequent lowering of physiological resistance is limited in severity but not in duration, a chronic instead of an acute abscess may result. For this to occur, it is necessary that the action of the cocci be restricted. In the alveolar process this may be due to non-exposure of the devitalized pulp to air, in which case mummification or dry gangrene of the pulp may occur, or it may be due to partial drainage of the abscess through the crown end of the root, relieving pressure, which latter is a potent factor in the burrowing of pus through tissue, or there may be a fistula opening from the abscess into the mouth, acting as a drain. In this latter case, formation of pus may take place so slowly that the mucous membrane around the opening of the fistula will heal after each evacuation and not require puncturing for days or weeks, until the accumulation of pus puffs it out in a tumor-like

formation on the gum. But from whatever cause, if the action of the ptomaines be so divested of virulency that the leucocytes are able to hold their own in the struggle for supremacy, a wall of granulation tissue will be formed about the focus of infection.

In the course of months this wall of granulation tissue develops into fibrous connective or scar tissue, precisely as though the abscess had been evacuated and the entire lost tissue restored. This wall or sac is nature's effort to prevent the encroachment of pus on the neighboring healthy tissue. Now, if no new source of irritation arise, the fluid portion of the contents of this sac may be absorbed, leaving behind a dry cheesy looking mass that may remain encapsuled for years without giving any trouble, but eventually the conditions there will become favorable to the rapid propagation of bacteria and active inflammation will result. In case of an alveolar abscess, this variation in condition is often the result of decay reaching the pulp chamber and admitting moisture and bacteria to a dry, gangrenous pulp. Moisture and bacteria will quickly set up putrefaction, and all of the evils attendant on an acute abscess will follow. This may also occur from mechanically opening up a long since dead pulp without the necessary antiseptic precautions.

One thorough draining and cleansing of a small acute abscess is usually all the treatment necessary to effect a cure. But this is difficult to accomplish in the case of an alveolar abscess, unless there is a fistula present. Given a fistula and drainage is provided for. To thoroughly drain an abscess in the superior maxilla, through the root of a tooth, at one sitting, is possible only under the most favorable circumstances. These favorable circumstances would be an abscess directly above the point of the root and a free opening through the latter. If the abscess is down on the side of the root the operation is much more complicated. Abscesses in the inferior maxilla can seldom be thoroughly drained through a tooth root at one sitting.

Therefore, considering the matter from the standpoint of the conditions present in the alveolus, immediate root filling is contra-indicated in these cases. It is a poor surgeon that would sew up a wound without providing for drainage.

But in chronic abscesses the contra-indications are still stronger. In this case, in the absence of a fistula, we have not only the same difficulty to contend with that we had in the acute

abscess, namely imperfect drainage, but the case is still further complicated by the probable presence of this "pus sac" of fibrous connective tissue. A plentiful formation of blood vessels is absolutely necessary to the production of scar tissue. A newly healed wound is always red, indicating an extensive blood supply. But in the course of months it becomes white. The fibrous connective tissue has contracted; these numerous capillaries, so useful in building up the new tissue, have fulfilled their purpose and are now dispensed with, and old scar tissue has even fewer blood vessels than had the normal tissue which it has displaced. Anyone who will carefully examine a "pus sac" on the root of a tooth will be struck with its resemblance to old scar tissue. The resemblance need be close for they are pathologically identical.

For the lost tissue in that locality to become entirely replaced with scar tissue after removal of the irritant and evacuation of the abscess, it is necessary that this sac be either destroyed or absorbed, so that an active inflammation—a productive inflammation—may be set up in the contiguous tissues. This, and this only, will promote a restoration of tissue. That it is practically impossible to do this in one treatment, in the absence of a fistula, will have to be conceded. If this abscess is drained and cleansed daily for a few days, judicious irritation of its walls may result in setting up inflammation enough for the production of new tissue. A good opening through the root and as direct access to the abscess as can be obtained, are essential to success. These cases often baffle our utmost efforts to control them. If there is a fistula present, the matter is much simplified. The root may be filled and the fistula will serve not only as a drain, but as a channel of medication if any such is needed after one thorough treatment.

Therefore it may be assumed that the presence of an abscess, whether acute or chronic, is a contra-indication to immediate root filling, unless there is a fistula leading from the point of infection. To obtain the best results, drainage must be thorough. That is a simple surgical axiom. And without a fistula, the root canal must be depended upon for drainage.

This view of the question totally ignores the arguments for and against immediate root filling that have for their base the conditions present in the pulp chamber and canal. That is another matter

The immediate root fillers have been short sighted. They argue entirely from the condition in which they get and leave the tooth. More important, because more uncertain, questions are the conditions of the peridental membrane and the adjoining alveolar process.

Treatment of Acid Conditions of the Mouth by Kreosotum.*

BY G. H. WINCKLER.

. . . Every dentist has observed in some mouths a snow-white line on the enamel of the teeth along the gingival borders of the gums on both labial and buccal surfaces, where neither softening nor decalcification had yet occurred, and where, especially on the incisors, no lodgment of micro-organisms had been maintained. That is the first decolorization due to the action of acid on the translucent enamel, and that acid is an elimination from the mucous glands of the gingival border, and is the positive evidence of a morbid systemic condition.

. . . In the case of simple acid excretions, I find Kreosotum an almost perfect specific. I administer Kreosotum in three ways, according to my patient. Three or four powders of the 12x each containing about as much as will rest on a dime, are given at night, between the last meal and bed-time, thirty minutes apart, and two powders in the morning before breakfast, one immediately on patient rising and the other in twenty or thirty minutes.

In place of the powder, I sometimes give a drachm vial of the Kreosotum 12x in liquid preparation, one or two drops in water in the same number of doses and at similar intervals as the powders.

I keep this treatment up from 48 hours to three or four weeks as each case may demand.

Where there is no gingivitis or stomatitis in addition to the acid excretions, I prescribe:

| | | | | |
|---|--------------------------|---------|------|------|
| R | Iodide Potassium, | - - - | grs. | 100. |
| | Syrup Sarsaparilla Comp. | - | ozs. | 3. |
| | Tinc.. Gentian Comp. | - - | ozs. | 2. |
| | Aq. q. s., ad. | - - - - | ozs. | 6. |

* Abstract of a paper read before the New Jersey Dental Society, August, 1895.

Directions are to give one dose after each meal, and one dose between meals, the last being taken at bed-time.

The syrup of hydriodic acid I prescribe from 20 drops to a child to desert spoonful to an adult three times a day after meals. The iodine in this preparation being much more active than iodide of potassium, care should be exercised and small doses preferred. After the iodine treatment I prescribe the Kreosotum as stated.

Good mouth washes may be used as local aids.

Hints.

BY M. G. JENISON, MINNEAPOLIS, MINN.

GLASS can be drilled quite easily with an ordinary steel drill, in the dental engine, if the instrument is kept moistened with a solution of turpentine and camphor. By the same means, cavities can be inserted for the filling of artificial teeth. In this operation it has been my custom, to grind away with the corundum wheel as much of the tooth as I desired to contour with the gold and then cut the retaining shape with the drill. Although this method is not one of recent origin, it may often times be found exceedingly useful.

If gold fillings be desired in artificial teeth, for temporary purposes or for display work, a very good imitation may be made with the gold used by china decorators. This is put on with a brush like paint and the filling can be outlined in any size or form desired. After firing it the same as china it is burnished and will wear and retain its color until worn away by abrasion. By putting on two coats of the gold the durability is increased.

If it is desirable when the gold is worn away, the tooth can be removed from the plate and the operation repeated. The labor and expense is comparatively slight.

The Glenoid Fossa: Movements of the Mandible: Cusps of the Teeth: Scientific Articulation of Artificial Teeth, etc.*

BY W. E. WALKER, D.D.S., PASS CHRISTIAN, MISS.

TAKING for granted the familiarity of all with the temporo-mandibular articulation *as described in the text books*, I have not been able to find on record mention of the apparently unrecognized fact that that portion of the roof of the glenoid fossa which affords articulation to the condyle of the mandible has a forward and downward slant or incline, causing the condyle, in both its anterior and lateral excursions to move not only *forward* as usually stated, but also *downward*, traversing a course forming an angle on an average of about 35° to a line perpendicular to the facial line, or about 55° to the facial line.

The condyle, also does not swing directly from its upper surface, but as though pivoted in an imaginary slot about fifteen millimeters below its upper surface, all of the ramus (or condyle) above this point moving forward, and all below it swinging back in opening the mouth.

The peculiar articulation of the mandible gives it a back-and-forward rocking motion and also a swinging or see-sawing motion from side to side.

These movements, as also the *articulation* of the teeth, cannot be studied from the naked skull, the glenoid cavity being emptied of its intra-articular fibre cartilage, its double synovial sacs, and its membranes having a space between the upper surface of the condyle and the roof of the glenoid fossa, so that when the condyle is thrown up in the socket (of the dried skull) the teeth fail to articulate, though when in the position of rest they occlude naturally (using the words articulation and occlusion in the differential sense given by Dr. Bonwill).

The movements of the mandible must be studied either from the living subject or from a properly constructed articulator, which must be both anatomically and physiologically (or functionally) correct, and therefore capable of reproducing all the movements of the mandible, including the downward and forward course traversed by the condyle with the consequent drop of the

* Abstract of paper read before the Southern Dental Association, Atlanta, Ga., Nov., 1895.

ramus which influences the articulation of the teeth in the varied positions of the mandible.

The movement of the condyle constitutes an important factor to be borne in mind in our studies of the articulation of the teeth, as in the shaping of artificial cusps, whether in fillings, crown work, bridge work, or plate work; in the study of the natural cusps with a view to bettering the articulation both in the treatment of pyorrhea alveolaris and in orthodontia; in the study of diseases of the facial muscles and of the glenoid fossa, etc.

Having met with unsatisfactory results in the construction of artificial dentures, even with teeth articulated according to Dr. Bonwill's instructions, in the Bonwill Anatomical Articulator, (which is generally accepted as reproducing correctly the movements of the human jaw). I was led to study first, the articulation of the cusps of natural teeth, both in the mouth, and from casts placed in the Bonwill Articulator. I found that while the *occlusion* was the same as in the mouth, the *articulation* of the cusps of models of normal natural teeth, placed in the Bonwill articulator was *all wrong*, when the jaw of the articulator was placed in the position for biting or grinding. Careful experiment proved that *the right angle* formed in the Bonwill articulator at the junction of the parts representing the ramus and condyle moving in the glenoid fossa was the cause of the defective articulation. Remodeling the articulator in such manner as to raise the portion carrying the spiral springs until the angle was increased to an average of 35° above the right angle, I found would allow a large number of models of natural teeth, with normal cusps, to articulate correctly in any position that can be taken in the mouth, whether for incising, or for grinding, either on the right side or on the left.

Further experiments showed, however, that it was necessary to have an adjustable angle, to suit the variations from the average (or what might be called *the normal*) ranging from 30° to 45° in extreme cases.

The articulator constructed with the adjustable angle, hinged at the junction of ramus and condyle, with set screws to secure it, and gauges to register the angle found in individual cases, which sometimes varies even in the two sides of the same face, with a further modification enabling the correction of "a false bite," constitutes this articulator.

Seeking the cause of the peculiar features in the articulation of models of the natural teeth, to the movements described by lower jaw of the reconstructed articulator, led to the discovery of the combined downward-and-forward movement of the condyle, in the antero and lateral excursions of the mandible, and also in opening the mouth, which as far as I have been able to ascertain has hitherto escaped observation, or has not been placed on record in the literature of human anatomy.

The next step was to reproduce with artificial teeth, the articulation of the natural teeth, in order to give to artificial dentures the grinding and biting functions of the natural teeth, instead of the usual up and down *machine* action of full dentures with nearly cusplless teeth with which our patients have been obliged to content themselves to a large extent.

This led to a minute study of the cusps of the human teeth, both in the mouth and from models, and their inter-articulation.

This chart shows Dr. Bonwill's rear view of the articulation of the molars in the mastication position, with all the cusps, upper and lower, buccal and lingual, on the same plane, (as given by him in Harris' Principles and Practice, 12th ed. and reproduced in the chart found in Trans. W. C. D. Congress, p. 232), also showing the relative position of the same cusp-level lower molars with the normal drop of the ramus, preventing contact of any but the buccal cusps on the masticating side, with no balancing contact on the other side, showing finally the normal superior buccal cusps on the same plane as before with the longer superior lingual cusps on a lower plane and met by the lower buccal cusp in balancing occlusion on one side notwithstanding the drop of the ramus, the masticating articulation between the buccal cusps on the higher plane and the lingual cusps on the lower plane being also perfect on the other side, as in the mouth, and also in Walker's physiological articulator, thus giving to artificial teeth the normal cusps of the natural teeth, essential to the grinding function in mastication.

This diagram presents a side view of the cusps of the teeth of one side of the mouth showing the short lingual and long buccal cusp of the superior first bicuspid, the nearly level cusps of the second bicuspid, and the gradually lengthening lingual and decreasing buccal cusps of the superior, 1st, 2nd and 3rd molars, the reverse condition being seen in the inferior molars.

The difference in the planes of the buccal and lingual cusps is really greater in the mouth than appears in looking at a tooth out of the mouth and held with its long axis vertical, as seen in the usual book-illustrations; in the mouth the inferior molars leaning lingually and the superior molars buccally, increasing the apparent distance between the base of the sulcus and the most prominent point of the cusps which are raised by this inclination from the vertical, and conversely decreasing the apparent height of the other cusps.

As the superior lingual and the inferior buccal cusps increase thus in length as we proceed toward the ramus, interference of these cusps, in the lateral movements of the mandible would be inevitable were it not for the drop of the ramus caused by the condyle gliding on the downward slant of the roof of the glenoid fossa as described, but which does not appear to have been observed or recorded, or taken into consideration as a factor, in studying how to overcome the difficulties encountered in certain departments of our work.

The reproduction of this feature in the articulation of artificial teeth necessitates the use of an articulator which shall reproduce this movement of the condyles, and this is claimed to be done in this new articulator.

DISCUSSION.

DR. B. HOLLY SMITH said this was one of the best papers ever read before the Association. He pronounced the views rational and he was convinced that the conclusions were correct.

DR. L. P. DOTTERER said that the subject of cusps for artificial teeth had been discussed at some length in his local society, the conclusion reached being that patients were satisfied with artificial teeth almost without cusps, there being less liability of tilting the upper plate or of knocking about the lower plate.

DR. J. Y. CRAWFORD said that the paper contained much that was valuable and new and many valuable suggestions and he felt quite sure that the writer was correct in his conclusions, and in his description of the true movement of the condyle in the glenoid fossa, and of the rocking motions of the mandible. He was particularly well pleased at the prominence given to the upward course from the bicuspid backwards, considering that an important point in the construction of artificial dentures in overcoming

irritation of the tongue. He considered a careful study of the articulation of the teeth to be very important, not only in the construction of dentures but in giving the proper occlusion to fillings. He has not recognized the necessity of cusps for grinding food with artificial teeth, as much of the food now used can be prepared for swallowing by the mashing process of the ordinary dentures. There will always be a difference between the manner of using natural and artificial teeth. With the latter we must rely on the up-and-down motion. The results attained by the writer of the paper have, however, important practical bearings in other directions than in the construction of artificial dentures.

DR. WALKER in closing the discussion said that while it was true that artificial dentures as usually constructed, with almost cusplless teeth, would mash food with the up-and-down motion, that was not mastication; as mastication is essential to insalivation, cusps are necessary for grinding the food in mastication, whether with natural or artificial teeth. Artificial teeth can be properly constructed with normal cusps, and made to articulate in the mouth in the lateral movements, as shown in the diagrams, but not without an articulator which provides for the drop of the condyle in the lateral movements of the mandible.

DR. DOTTERER asked if teeth could be so perfectly articulated by the methods described that when placed in the mouth they would not require to be touched with the stone?

DR. WALKER replied that as the most perfectly jointed gum-sections sometimes get displaced in vulcanizing, with plain teeth there was even more liability of having a tooth displaced; the materials with which we work not being infallible, the giving way of plaster, or some slight change during vulcanizing, may necessitate retouching, but *in the wax* they can be made as perfect as described.

Materia Medica and Therapeutics.*

BY J. S. CASSIDY, M.D., D.D.S., COVINGTON, KY.

ONE OF the queer things appearing with the demand for iodoform substitutes, is that they must all be more or less rich in

* Abstract of report at American Dental Society, Aug., 1895,

iodin. Aristol, for instance, is thymol iodid, iodoform being menthenyl iodid. It does not follow, however, that these must give up their iodine in order to be therapeutically active. Indeed, comparatively few chemical compounds are dependent on decomposition for their medicinal activity, among such being the peroxids of hydrogen and of sodium, the hypochlorites, etc.

The disinfectants, as a rule, either give to or take from the infectious matter their individual equivalent radicals, negative or positive, as the case may be. Antiseptics, on the contrary, do not, as a class, lose their chemical identity by contact with organized material; of such are iodoform, common salt, carbolic acid, etc. They act as antiseptics in their capacity of compounds, as is easily proved by sufficient experiments, notwithstanding some authorities claim that iodoform, at least, is effective only by setting its iodine free.

Many of the most dangerously active bodies in their influence on animal life, retain their compound nature when in action; of which prussic acid and arsenious oxid will serve as examples. We need, therefore, not necessarily pay attention to the relative proportion of any element in a compound so far as the medicinal effects are concerned, unless the mode of action of the compound involved is by co-incident decomposition in the presence of organized structure; and of such, iodoform and its cogeners are not good examples.

One of the newest drugs belonging to this category is called di-iodoform. When presented in powder to freshly cut or abraded surface, or in chloroform solution into root canals, it fulfills the duties of a very good antiseptic when either in crystal or powder, is inserted into root canals and fused by a hot broach. It resolves, on cooling, into an insoluble black concreted mass of permanent character. . .

Electrozone has proven to be an acceptable, inexpensive and effective germicide and disinfectant. . . The 25 per cent. dilution of electrozone does good service as an injection into the antrum immediately after the withdrawal of pus. I think it is preferable for this purpose to peroxid of hydrogen, inasmuch as it is not accompanied by a too rapid evolution of gas and consequent pressure in the cavity.

Many experiments made during the past year in the laboratory and on the living subject as well, with aqueous solutions of

the gas formaldehyd, have convinced the writer that as an embalmer of pulp debris, it is superior to all other agents thus far employed exclusively for such purposes. The aldehyd condenses into paraldehyd in the meshes of the devitalized tissue, and at the same time absorbs the organic laden moisture present, changing the debris into a hard, coherent, non-infectious residue.

In closing this report, I wish to thus publicly thank Dr. Harlan for having called our attention to the virtues of trichloroacetic acid. When properly diluted and applied to the inflamed parts, including and surrounding the peridental membrane, due to whatever cause, its magical influence, owing to its solvent, caustic, stimulant and astringent action combined, in lessening, if not curing the disease, is so evident, that a specific position has been justly awarded it by those who have given it a fair and impartial trial.

Some Thoughts on the Combination of Amalgam and Gold.*

BY F. W. KNOWLTON, D.D.S., AKRON, OHIO.

I HARDLY need state that the same care and judgment are necessary in the application of amalgam and gold as of all filling materials if we would attain the results which are possible. Many times this combination can be used and better results follow than when gold or amalgam alone is relied upon, and in not a few cases in which it would be impossible to obtain the desired end with any other material. The plea that two sittings are necessary in order to complete such a filling no longer holds, for with a good alloy and Steurer's Plastic Gold such objections are overcome with entire success, although in some cases there is an advantage in allowing the amalgam to harden and complete with the gold at a subsequent sitting. The satisfaction of knowing that there is perfect union between the amalgam and gold, giving you practically one material, is certainly something in its favor. I do not think that we need fear that this kind of work will make slovenly operators of us, for the care necessary for its successful insertion is best realized by those who are familiar with its workings. As an illustration we will take a lower molar

* Abstract of paper read before the Ohio State Dental Society, December, 1895.

tooth, medium in texture, the proximal surface badly undermined, usually extending on to the occlusal surface. Under existing circumstances we may dislike to put in amalgam, and hesitate to insert a gold filling but if we can combine the two, retaining the better properties of each and avoiding the less desirable ones, is it not good practice to follow? In such a case the different parts of the cavity are prepared consonant to the metal it is to receive, the lower third, or possibly half of the cavity, depending somewhat on the size of the same, made suitable for an amalgam filling, the remainder of the cavity prepared for gold, this to be retained in place independent of the amalgam portion. Adjust the matrix securely, and at the lower third or half, as the case may be, perfectly, so that there will not be the least danger of any of the amalgam being forced out around the matrix. Insert the amalgam in the usual way, filling the cavity rather full and then remove it down to the proper amount. In this way the portion which remains will be quite hard and free from excess of mercury. Insert the plastic gold immediately, forcing it on to the amalgam with large points at the start, continue adding the gold until it finally overcomes the mercury, then complete the filling in the ordinary manner, using the same or any other gold you may prefer.

Remove the matrix and finish as you would any gold filling, noting the ease with which you are able to dress down the filling at the cervical margin without great annoyance to the patient. The galvanic action which takes place as a result of contact of the different metals, causes the oxides and sulphides to be deposited on the amalgam more abundantly than when it is used alone, consequently, this portion of the filling becomes quite black, which to many is a commendable feature, preventing recurring decay at that vulnerable spot, the cervical margin, whether mechanically, by filling the dentinal tubules, chemically, therapeutically, or by all combined we leave to each one's choice, but this we do believe, that the results obtained justify the means. There is no bulging, crevicing, or disintegrating of the amalgam under the galvanic action for it remains just as left after it receives the finishing touches. The gold portion of the filling serves us in its own good way, preserving its own and the margins of the tooth as only gold can, under the strains to which the teeth in this location are subjected during mastication; and that important

part of the operation, that of reproducing the original contour of the tooth, which tends to preserve the health of the surrounding tissues and makes a presentable piece of work in the eyes of the patient can best be accomplished with gold. There is a pronounced diminution in the number of troublesome cases caused by the extremes of heat and cold, more so than when either metal alone is used under like condition, but this must not be taken as an argument that we need not use precaution. No tissues are apt to perform their normal functions unless free from irritation and whatever aids us in maintaining such tranquility of nerve possesses a commendable feature. This is only one of the many valuable combinations which we are permitted to utilize in operative dentistry, and it does seem as though there are good grounds for the belief expressed by many of those prominent in our profession that this sort of filling will prove satisfactory to patient and operator, but only when coupled with that essential element of a dentist's makeup—judgment.

Two Interesting Cases in Practice.*

BY EDWARD SHIELDS, CINCINNATI.

A very interesting case of actinomycosis in the pulp of a tooth came under my observation a year ago last March. A patient was recommended to Dr. Albert's clinic for diagnosis of a swelling occurring on the right side of the lower jaw. By mistake he came into the dermatological department, I was there in the laboratory at the time, and the first assistant seeing that the patient had a swollen jaw, said to me, "You were once a dentist; remove the tooth." I did so, thinking I was dealing with an ordinary abscessed tooth; and out of curiosity I fractured the tooth, and was surprised to find an ossified deposition in the pulp; the age of the patient being seventeen I thought it was rather strange that an ossific deposit was to be found in the pulp. A few minutes later the physician who referred the case to the clinic came in, and I showed him the tooth, and told him I had removed it. He said, "That was not a case for you; that is a case of

*Presented to the Mississippi Valley Dental Society, 1895.

actinomycosis, and should have gone to Prof. Albert." I quickly gathered the fragments of pulp and macerated it, and put it under the microscope, and was gratified to find that this ossific deposit was nothing more than a mass of actinomycosis. As the tooth was not decayed in the least it led me to believe that it was not the source through which the infection had passed, but that it was secondarily affected through the blood-vessels.

The second case in question is one of which Dr. Callahan has some knowledge. In 1888 a physician of this city came to me with a swollen face, and dead tooth, apparently perfectly sound otherwise, no fissure decayed. I opened up the pulp cavity, and removed the pus, and treated the tooth by the usual methods then employed; and in due course of time the tooth began to die, and the pulp canal was filled with oxyphosphate of zinc and cotton—that is, the cotton saturated with the oxyphosphate. About six years later he again presented himself at my office with the first and second molar affected in the same manner. The first tooth was in the upper jaw. The second case was in the lower jaw,—first or second bicuspid, I forget which. It was very loose, and I pushed it to one side, as you would a temporary tooth, and then took my forceps and attempted to remove the upper tooth. To my surprise I found that he had nothing but a crown, with two pins from the two oxyphosphate pulp fillings remaining in the crown of the tooth. Six months later, on the opposite side I removed a tooth having the same characteristics; and Dr. Callahan, I think, had the pleasure of removing a tooth from this gentleman's jaw either this, or last year. Now, as to the etiology, I must say, that I don't know. Have not the slightest idea as to the cause. There is no specific history, and the only theory that I can think of weaving is, and it is hardly possible, that of a thrombus clogging the vessels and cutting off the nutrition of the tooth and consequent absorption.

ALL SORTS.

Vacuum Chambers and their Position.

In a contribution to the *Cosmos*, Dr. H. H. Burchard says:—

“Plates should by all means be made without chambers, if without they still fulfill all the requirements; but my experience teaches me that this result is the exception, not the rule, and this experience is not an inextensive one.”

In regard to the scientific adaptation of the vacuum chamber he says:

“About the centre of gravity the vacuum chamber should be placed, its outline following that of the arch, on a smaller scale. In the vast majority of cases, the center of gravity thus determined will be found at about the height of the vault.

The ends or apex and angles of the chamber should be about equidistant from the centre of gravity, as a rule the apex of the chamber as far in front of the intersection of the diagonals as the center of gravity is behind that point.

To apply these facts practically as a guide to finding the correct position of a chamber—draw first on the plaster model the median line of the vault. From the centers of the cuspidati to the centers of the third molars draw diagonal lines, the diagonals of the trapezoid. When all the teeth are absent, draw from the positions formerly occupied by the cuspidati, to the centre of the condyles, the two diagonals.

To find the center of gravity, draw from the centers of both condyles, lines to the first and second bicuspid of the opposite sides, other lines, which intersect at a point of the median line; this point will be the centre of gravity of the trapezoid and of the palatal vault. The intersection of the diagonals will mark the focus of the small parabolic area to be covered by the chamber-piece. Draw this parabola, its apex, about as far in front of the point of intersection of the diagonals as the center of gravity is behind the latter point, the angle of the parabola, the same distance from the centre of gravity as the apex. Should there be a lack of harmony, of bilateral symmetry of the right or left sides of the arch outlines, make the outline of the chamber in correspondence.”

Further he says:

“I have followed this plan for at least ten years, and in that time applied it to thousands of cases, and believe with better results than had hap-hazard placing of a chamber been practiced.”

Infiltration Method of Anesthesia.

In an article in the *Journal American Medical Association*, Dr. Wurdemann, in writing about the Schleich method of anesthesia, says:

"Experiments proved that a .2 per cent (2 to 1000) salt solution met the requirements. Solutions above or below these strengths were either painful to inject or produced no anesthesia. Operations may be painlessly done by a .2 per cent. salt solution. . . .

"The narcotics were more active when used in the .2 per cent. salt solution and could be used in even lower attenuations, for instance, .01 per cent. cocain in a .2 per cent salt solution prevented paresthesia. It was also found that if the solutions were used cold, their efficacy was increased many fold, and that when used at the temperature of the body, little or no anesthesia followed."

The following formulas are advocated by Schleich:

| | | |
|----|--|-----|
| R | Cocain mur | 20 |
| | Morph. mur | 025 |
| | Natr. Chlor | 20 |
| | Aqu. dest. ad. 100 | |
| M. | Sterilisat. adde. sol. ac. carbol. 5 per cent. gtt ij. | |
| S. | Solution No. 1, strong. For operation upon highly inflamed or hyperesthetic areas. | |

| | | |
|----|---|-----|
| R | Cocain mur | 10 |
| | Morph. mur | 025 |
| | Natr. chlor | 20 |
| | Aqu. dest. ad. 100 | |
| M. | Sterilisat. adde. ac. carbol. 5 per cent. gtt ij. | |
| S. | Solution No. 2, medium. For most operations. | |

| | | |
|----|--|-----|
| R | Cocain mur | 01 |
| | Morph. mur | 005 |
| | Natr. chlor | 20 |
| | Aqu. dest. ad. 100 | |
| M. | Sterilisat. adde. sol. ac. carbol. 5 per cent. gtt ij. | |
| S. | Solution No. 3, weak. For superficial operations upon nearly normal tissues. | |

At my request, Parke, Davis & Co., of Detroit, Mich., have prepared tablets, triturates and compressed tablets from which these solutions may be extemporaneously made by dissolving one tablet in 100 cubic centimeters ($\frac{2}{3}$ ij) of distilled or boiled water. These will be found convenient in practice.

All are to be kept strictly sterile; glass stoppers or scorched cotton such as are used in bacteriologic experiments for the bottles; small quantities to be poured out in smaller vessels for each operation. Just before

operation the solution should be cooled by laying the bottle containing it on ice. The common form of hypodermatic syringe with the finest of needles is all that is usually needed.

The discovery of these truths so valuable for the question of local anesthesia is due simply to a slight change of method; the application of the solution within and not under the skin. The anesthesia is caused by the replacement of the normal fluids of the tissues by a fluid of less specific gravity (the water) which causes anemia, compression and cooling, producing thereby a temporary paralysis of the nerve filaments.

Having the required formula, the solution aseptic and cold, we fill the sterilized hypodermic syringe; pinching the skin slightly between the thumb and forefinger of the left hand; the needle is then passed obliquely under the epidermis to the papillæ, intra-cutaneously, until the lumen is fully inserted. A few drops are then injected, thereby producing a white elevated wheal, the infiltration extending throughout the whole thickness of the skin. There is immediate and complete anesthesia throughout the extent of the infiltration which lasts from ten to twenty minutes according to the density of the tissue so edematized. No tissue offers any deviation from the dictum; every structure is made anesthetic that can be artificially edematized; this holds good for skin, mucous and synovial membrane, periosteum, fascia, muscle, lymph glands, nerves, viscera, and even bone.

Anesthesia exists only within the area infiltrated by the solution and outside of that normal sensation remains. In operations on or through the skin and mucous membranes the first wheal is increased to the size of a dime by increased pressure on the piston; the needle is moved and re-inserted at the periphery of the wheal, but still within it, and a new wheal raised. In this way the line of incision is marked out to any desired length or breadth. In general surgical operations we would then infiltrate the underlying tissues, by slowly pushing in the needle and injecting a few drops at a time until the deeper tissue is edematized. . .

"Where the tissues are inflamed the sensibility is pathologically increased. Here it is indispensable that the infiltration be begun in sound tissue and carried over into the part to be operated upon. The dilated blood and lymph channels of the inflamed skin allow us to anesthetize quite a large spot from one puncture.

The injection should be done slowly at first and when the infiltration is only felt by its tension, we may rapidly flood the part to the required extent. Under no circumstances must fluid be primarily injected into an abscess, an exudation or a pathologic focus. The only result is increased tension and pain. We must not lose sight of the cardinal fact that the anesthesia exists only within the area infiltrated by these solu-

tions and that outside of that there is normal sensation. The method rests principally on the production of a complete artificial edema of the tissues. Wherever we wish to operate with exact anesthesia, the field of operation must be tensely filled with the solution so that it exudes from the cut surface."

A Hint on Articulation.

It is often very difficult to make a full upper denture work satisfactorily when the patient has only the four or six lower anterior teeth. If only the upper set is to be supplied, in adapting the teeth to conform to the lower teeth, leave room for the lower teeth to pass inside of them without touching, thus preventing tipping at the back. Have the lower teeth bite upon a shoulder of rubber built upon the upper plate, from the pins of the teeth back about one-eighth of an inch. When the vulcanite is thus used for a masticating surface, use only the finest rubbers, such as bowspring or Sampson.—*Western Dental Journal*.

Clasp Plates.

Regarding this class of work, Dr. J. G. Harper contributes an article to the *Items*, as follows:—

"There are no objections to clasps if properly made and adjusted.

The first step in the operation of making a clasp plate is to obtain a model of the tooth to be clasped, which may be taken in modelling compound or wax; an impression may be taken with moldine and a metal model made.

The model secured, the next step is to make a pattern for the clasp, using card-board for the purpose. The clasp should be wide, so as to clasp the tooth firmly. If you should wish to hold anything firmly in the hand you would not clasp it simply with the thumb and finger, but with the thumb and all the fingers, and with both hands if the object to be held was large enough. The clasp should embrace the whole crown when permissible. The metal best suited for clasps is composed of a five-dollar gold piece, to which is added a ten-cent silver piece, and rolled to 24 of the gauge plate, this clasp metal has the proper spring, and does not lose that property when heated in soldering, and can be soldered with 18k. solder when used on a gold plate.

The paper pattern is used to cut out the proper shape of the metal, then the clasp is properly fitted to the model by commencing at one end of the clasp and carefully bending the metal trying on the tooth, pro-

ceeding till the clasp fits the model, filing away the clasp so as to accommodate the gums. The clasp is now ready to be tried on the tooth and further adjusted if necessary.

If the clasp is for a rubber plate, a stay should now be soldered on the lingual side of the clasp; these stays may be made of nickel by simply rolling "a nickel" to 28 of the gauge plate. A piece of the nickel of the proper width and half an inch long is taken, some holes made in it and fitted to the clasp, by bending slightly to fit the clasp instead of placing the stay at right angle to clasp, attach it at about forty-five degrees, bending the nickel to fit the clasp instead of filing it to fit, this gives a firmer attachment.

The clasp is now ready to be smeared on the inside with a sticky wax, made of equal parts of bees-wax and rosin, a little of the wax should be also placed on stay to fill up the space between the stay and the palate or gum. The clasp is now placed on the tooth, any surplus wax removed, and see that the clasp is firmly set in its proper position. Select an impression cup; see that it does not touch the clasp or stay; take the impression in plaster; let set firmly; remove by gently loosening and carrying it away from the teeth in the direction of the long axis of the teeth; usually the clasps come off in the impression, if not, they should be removed and properly set in the impression; remove the wax from the inside of the clasps, being careful not to disturb the wax on the stay as this is a part of the impression. Prepare the plaster impression for the pouring of the model, allowing none of the parting material to cover the inside of the clasps. The plaster for the model is poured; allowed to harden; the impression removed, and you have a model of the mouth with the clasps held firmly in position, and are ready to go on and make the plate. Fourteen karat solder may be used for the rubber plate, as the solder is covered up in the vulcanite.

These clasps may be used on gold plates. The best results are obtained by first fitting the gold plate to the mouth, then placing the clasps in position as indicated in the foregoing. The plate may be held in position by the use of a little sticky-wax. The impression is taken with the plate and clasps in position.

A model is now made of a mixture of plaster and marble dust or sand, after removing the impression you have a model of the mouth with the plate and clasps in position; dry out and solder the clasps to the plate, using 18k. solder, only tacking the parts together, using but little solder, so that in case the clasps are not correctly adjusted they may easily be removed, the completion of the soldering can be done at the time of soldering on the teeth. The plate with the clasps now attached is ready to try in the mouth; if all is correct, proceed to get the bite and attach the teeth in the manner preferred."

The Teeth of Mexicans.

IN the *Pacific Coast Dentist*, Dr. Geo. Cool speaks of the teeth of the inhabitants of Mexico and Gautemaula, as follows:

"The teeth of the inhabitants of those countries are characteristic of their nervous temperament, and among them possibly the nervo-lymphatic will predominate. The early loss of the teeth of the female population can be attributed to their early maturity and the lack of knowledge of dental hygiene. Marriage often takes place at the time when our daughters are hardly out of the grammar school. I have seen children at nine years of age in possession of all their permanent teeth with the exception of the wisdom. My experience with these soft, chalky teeth has been the cause of my enthusiastic advocacy of contour fillings and the use of tinfoil.

Little attention is paid to orthodontia in those countries, and the surgical treatment of the oral cavity is left to the physician and surgeon. Pyorrhea alveolaris is very noticeable in the mouths of the people, and the treatment as a rule is very crude, and consists principally of removing the calcareous deposits about the teeth. Such treatment for this disease as I have seen at the clinics of the Stomatological Club is so far in advance of anything I have had any knowledge of that I feel well repaid for the time and money I have spent with this organization.

Syphilis and scrofula are very common. The "Hutchinson tooth" is often seen among the aristocracy, and this may explain why these soft teeth are so numerous."

Stop and Think.

In the *Office and Laboratory*, Dr. T. F. Chupein says:

"I had recently to extract a lower wisdom tooth, but after the tooth had partly left its socket and was about one eighth of an inch above the grinding surface of the second molar, there it remained entirely loosened, moving from side to side, yet still refusing to come out. Fearing to use more force to dislodge it than I had done, I stopped to think what was the trouble, and concluded that the roots of the tooth must have the *backward curve* which the roots of these teeth often assume. By placing an elevator between the teeth and using the second molar as a fulcrum, the partly extracted third molar was made to describe the segment of a circle

backward towards the throat, and tooth left its socket with scarcely an effort; while before, it resisted considerable force, which, if continued, would have resulted in breaking off the root."

Plaster Impressions and Special Trays.

In a contribution on this subject to the *Journal British Dental Association*, Dr. G. Brunton says: "The need for an impression of the mouth of sufficient accuracy to enable the workman to make a denture which will fit well and allow free play for the muscles of the cheeks and tongue, are all met by using plaster of Paris; but the use of plaster does not commend itself to many practitioners by reason of several drawbacks, one of which is the difficulty of getting trays for special cases and the trouble of casting trays in metal or striking them up in dies. This difficulty is overcome by the process which I am about to describe. A preliminary model is taken in every case where a plaster impression is required. On this preliminary model I construct a wax block, to obtain the bite and try in the teeth. I then proceed to make a special tray in this manner: Two thicknesses of wash leather are taken, moistened and pressed well down over the model. After this a piece of hard material (which is composed of equal parts of stentor godiva modelling compound and shellac, melted together in a pan and rolled out in sheets) is taken, and a portion of it made soft in hot water, and moulded down on the leather. The edges are trimmed with a sharp knife or file. A piece of stout wire is next bent to form a handle, the ends of the wire being heated and bedded into the tray. This step accomplished, the leather is removed. A rigid tray is thus produced, which will not warp with the heat of the mouth. The leather allows sufficient room for a film of plaster, say about $\frac{1}{8}$ to $\frac{3}{16}$ ths of an inch in thickness—a very important point in difficult cases, as the impression has to be broken to remove it from the mouth, and this is more easily done if the film of plaster is of a somewhat equal thickness, instead of having large blocks of plaster standing between the teeth, which require great force to break out.

We will now suppose the tray and patient are both ready. Take two small basins or cups; into each put about two tablespoonsful of a weak solution of potash-alum; have two coloring solutions ready, say aniline violet for one and carmine for the other; put a few drops of color in each basin; do not mix the colors. Have two small mixers ready in one hand, sprinkle the plaster into the water, stir both basins at the same time; put a sufficient quantity of plaster from one basin in the right side of the tray, and from the other basin in the left side, so that when the

impression is withdrawn the relative positions of the broken pieces are easily determined. A marbled effect may be produced by using one basin, mixing the plaster with one color, then just before putting it in the tray, add a few drops of the other color, and stir very little. I may say I much prefer the two distinct colors.

When the impression is removed from the mouth, it should be rinsed gently in cold water, the broken parts placed in position, and waxed to hold them there. The impression should be again rinsed in cold water, and to prevent its sticking to the model, a thin coat of dilute liquid silic should be painted over the surface and into the depressions formed by the teeth; the impression is then inverted and allowed to drain off. Tins may be put in, and the cast run in the usual way. The composition called hard-bake, which was invented and used by the late Sir John Tomes for try-in plates more than thirty years ago, and which is composed of gutta-percha and shellac, makes very good special tray. A very convenient basin for mixing plaster in may be made by splitting a celluloid ball (obtainable at toy shops); being elastic, they are easily and quickly cleaned in cold water."

Pulp Mummification.

In a contribution to the *Dental Cosmos*, Dr. T. Södörberg, after reviewing various methods advanced, gives the result of his own research as follows:—

" Experiments with twelve other pastes, first in test-tubes, next with freshly-extracted teeth, proved to my preliminary satisfaction that the following formula was the most reliable.

Dried alum, 3 i;

Thymol, 3 i;

Glycerol, 3 i;

Zinc oxid, q. s. to make stiff paste.

In this paste the thymol acts as the antiseptic, the alum as the mummifying agent, the zinc oxid as the coloring medium and the glycerol as the binding and penetrating agent.

Bearing in mind Dr. Miller's favorable recommendation of thymol, I adopted it as my antiseptic, and I fancy that I shall not have cause to regret my choice. My reason for adopting dried alum was that its tanning properties are far superior to those of tannin or any other tanning agent,—a statement which my practical tanner will indorse. Further, dried alum does not discolor the paste, while tannic acid, if substituted for the alum in the above mixture, produces a dark brown paste.

I need hardly point out that glycerol, with its great affinity for moisture and its well-known penetrative power, is an excellent carrying agent for all mummification pastes; further, that no better coloring medium can be found for the purpose in view than zinc oxid.

The entire paste is, finally, non-irritating; I have, in fact, continually used it for other purposes, *e. g.*, in deep cavities between pulp and filling-material, etc.

I have used this particular paste for over twelve months and, *so far*, not one single case out of a total of ninety-seven has given any after-trouble (alveolar abscess.)

My mode of procedure is as follows: After the pulp has been perfectly devitalized (arsenic, cocain, alum, equal parts, glycerol, *q. s.*, sealing with sticky wax), I open up the main pulp-chamber and drill out its dead contents, leaving the root-canals untouched. I then fill the chamber with paste, and with a flexible Donaldson bristle gently prick the paste into the pulps left in the canals (this, however, is not absolutely necessary). I now seal with cement and insert amalgam or gold, as case may be. I use rubber-dam or cup where possible, otherwise Sperling's rolls—the main thing being to keep out the saliva, at least until the first piece of amalgam has been inserted and burnished round."

Traumaticin.

Traumaticin is a saturated solution of gutta-percha in chloroform, says a writer in the *Bulletin Geneneral de Therapeutics*, and it is most advantageously prepared as follows: The lightest-colored gutta-percha procurable is cut into small pieces and macerated with 12 or 15 times its weight of pure chloroform for twenty-four hours, with frequent agitation. The mixture is then transferred to a retort, and about one-third of the chloroform distilled off over a water bath. The traumaticin thus obtained is a thick homogeneous liquid, to which the requisite medicament may be added. For ichthyol traumaticin 4 parts of ichthyol are added to every 10 parts—similar proportions are used for salol, lysol, and phenol. Corrosive sublimate is added in the proportion of 1 part of sublimate for 100 parts of simple traumaticin. If the simple traumaticin should be colored, and a colorless medicament is to be added, it may be discolored by means of animal charcoal. It is best applied with a brush of hog's bristles, and forms a thin impermeable, pliable pellicle when the chloroform dries off. It gives rise to no discomfort, except a sense of burning when first applied, due to the chloroform. Traumaticin of ichthyol is of special service in the case of erysipelas.

Commercial Electricity and the Application in Dental Practice.

Dr. L. E. Custer read a paper on the above subject at the First District Dental Society of Illinois and from the article as published in the *Dental Review*, we abstract as follows:—

“The ever increasing field for the application of the various forms of electricity in dental practice makes it necessary that the dentist should become familiar with the common electrical terms and the different commercial currents in general use.

There are three terms which are the foundation for electrical calculations, the volt, ampere and Watt.

The *volt* is the term for pressure, and we speak of it just the same as we do of water in a pipe at so many pounds pressure. The *ampere* is the term for quantity, and to use the same illustration, the ampere represents the carrying capacity of the pipes or cross section of the stream of water flowing. The *Watt* is the product of the volts multiplied by the amperes; that is, the quantity of water which flows through the pipe is equal to the size of the opening multiplied by the water pressure. In other words, the Watt is the unit of electric power, and 746 Watts are equal to one horse power. It does not matter how the Watts are made up, whether more of volts or of amperes so long as the product of the pressure (volts) multiplied by the quantity (amperes) is equal to 746, it is one horse power. A current of 75 amperes flowing under a pressure of 10 volts will do work equal to about one horse power, or a current of one ampere at 746 volts will produce one horse power, or a current of one ampere at 746 volts will produce one horse power. A 16 c. p. lamp consumes 55 Watts, at 110 volts that would be half an ampere each, and 13 such burning at one time represents an expenditure of one horse power. Or a current of 10 amperes at 110 volts is equal to 1100 Watts, or one and one-half horse power.

There are five different currents in common use. The arc light current, the 500 volt or car current, the 220 volt or power current, the 110 volt or Edison current, and the 52 volt alternating or Westinghouse current.

The arc current is familiar to all, and it affords an interesting example in electric arithmetic. It requires a pressure of 45 volts to leap across the distance between the two carbons of the lamp to give the light we see; but to give a steady light there should be 10 amperes of current. These 10 amperes of current are started out from the power house, and for every arc lamp through which they pass there is required an addition of 45 volts. That is, a pressure of 45 volts is required to jump the arc and maintain it in the first lamp. This lamp must be kept burning, and when the second lamp is reached the dynamo quickly makes an additional

45 volts, and so on all the around the circuit back to the power house. So that, if there are 50 arc lamps in the circuit there would be required 50 times 45 or 2250 volts to send a current of 10 amperes through the 50 lamps. The high voltage of the arc current is the cause of the danger. It is volts that kill.

The 500 volt current is used mostly for street cars and heavy power work. The high voltage is used here for the same reason that it is more economical to carry water in small pipes at high pressure than in large pipes at low pressure, as well as the fact that the motors are better proportioned for their work when operated by this current. It will be noticed that these cars are always lighted by five 110 volt lamps in series; that is, it requires 110 volts to properly burn one lamp, but with 500 volts pressure the current can go through one and then another till it has passed through five lamps, and each one will burn but little below its intended capacity. If four lamps were used they would soon burn out, because there would be 125 volts to a lamp instead of 110.

The 220 volt current is mostly used for power purposes, because it can be carried on a rather small wire and is not especially dangerous to life. This current is not, however, very common.

The Edison or 110 volt current is, as you well know, almost universally used for incandescent lighting and light power. This current does not differ from any of the preceding except as to voltage. It is sometimes called the constant current because the current is continually flowing in one direction. The pressure is set at 110 volts because it is found to be economically distributed at this voltage to that point where the voltage drops below 100. For this reason it is always used in small plants, or in large plants whose wires do not run far from the power-house, in thickly settled centers, and in hotels and public buildings.

The fifty-two volts or alternating current is used for incandescent lighting and light power also. This differs from the preceding in many ways. Instead of its flowing in one direction it flows alternately in one direction and then in the other. This current is distributed in an entirely different manner from the others. A current of very high voltage is conducted to what is known as the transformer, passing through which it induces an extra current in an entirely independent coil of wires and this new or induced current is the one carried into the house for use. So that the primary current of very high voltage is carried on a comparatively small wire for miles about the city at quite a small expense, and gives the consumer a light which would be impracticable with a constant current at that distance from the power station. This current is used mostly in small towns and in scattered suburbs.

Of the above mentioned currents the Edison or 110 volts constant

potential current is the ideal one for dental purposes and fortunately it is the most common of all. It is so easily made that nearly every office building operates its own plant. Or the dentist with a gasoline engine and dynamo can be independent at a very small cost. The current is safe to life and its wiring is quite simple. It may be used for power, for light, for cataphoresis, for electrolysis and for heat equally as well. In fact it seems as though the current was intended for dental purposes alone."

Treating Flabby Gums.

Dr. R. E. Sparks, cites the following interesting cases in the *Dominion Dental Journal*:

"Case 1.—Mrs. M——, aged about 70, had worn a loose upper plate for many years. It would only remain in place when held with the tongue. The ridge, from centre to about second bicuspid on each side, was a mass of flabby tissue. From the lip, in each canine fossa, hung a flap of mucous membrane about the size of a dime, but a little thicker. When the lip was drawn up it presented somewhat the appearance of a small bat. I explained that she need never expect to have a plate, however well fitting, to remain steady on so much soft tissue. I suggested its removal, making as light of the operation as possible. She consented, and I made a few injections of a local anæsthetic. With an ordinary pair of tongue forceps an assistant picked up the ridge-fold at one end. With one end I held the lip out of the way, and with a pair of curved surgical scissors in the other, it was a very simple operation to remove the whole fold. We immediately removed the flaps from the lips in the same way.

Case 2—A lady about 35. Considerable absorption in the centre, with large fold on each side extending back to about space of second bicuspid. Injected and amputated.

Cases 3 and 4—Man and wife, aged about 50. Man's case similar to Case 2, and woman's very similar to Case 1. Treatment as in other cases.

In neither case was the operation as painful as the extraction of an ordinary tooth. The after-treatment consisted of merely rinsing the mouth frequently with salt water. Teeth were inserted after about six weeks Cases 1, 2 and 4, and seemed as solid as artificial teeth ordinarily are. Case 3 has not yet had his made, though his gums are in good condition.

All these cases were the results of wearing upper sets of artificial teeth, with only a few front teeth in the lower jaw. This would indicate

that we should encourage patients to have lower grinders inserted where such may have been lost, and warn them of the result of neglecting to do so."

Beneficial Effects of Cold Water.

In a communication to *L'Odontologie*, M. Joseph cites the beneficial effects of cold water as a therapeutic agent. He says:—

"To raise the power of cellular reaction, to annihilate the noxious influence of the bacteria, these are the two rational indications which general hygiene and also the hygiene of the mouth should follow.

Much has been realized in the direction of the destruction of bacteria, but little attempt has been made to respond to the first of these formulated indications.

This attempt is the object of my communication.

Water is the essential element, the chief agent of buccal hygiene.

What is required of water by the dentist and the patient?

That it shall be neither cold nor hot, but lukewarm (some recommend the temperature of the body); that it shall not impress the central papilla of the tooth which is so sensitive to thermal influences; that it shall be soft, calming, sedative—in other words, without particular action, and that it shall not engender consecutive reaction.

Doctors, fearing the influence of cold upon the pharynx and larynx, recommend an indifferent temperature.

These prescriptions are not of a nature to displease patients, who in them find with satisfaction a natural refuge to the least intolerance of cold, *undeniable proof of a curable lesion.*

To systematize, to generalize, the application of tepid water, so as to produce a method of buccal hygiene, does not appear rational to us.

For, apart from the properties which we have named and the value of which we gladly admit, water possesses another of very great importance, which general hygiene and therapeutics have known the benefit of with striking success: it stimulates, gives tone, reconstitutes, and specially aims at *physiological antiseptis*. I hear the doubt expressed—Cold water!

I would fain risk finding myself in disagreement on this point with the greatest number among you, and perhaps with those not the least distinguished.

Cold is a redoubtable agent: it strikes with rapidity, and with decisive power. The maladies *a frigore* have not at all lost their meaning. If the intervention of bacteria has been invoked as decisive, frigorific impression is no less so for much of the initial trouble. The microbe is on

ly hampered by virtue of preliminary functional modifications, supported by the cells under the action of the cold.

I, for my part, have very often had occasion to prove this redoubtable power of cold. It was a real auto-experimentation, which did not at all lack precision. It was sufficient for me during cold weather, after taking something hot, to open the window, and to take a few inspirations of ambient air, to feel a touch of angina more or less intense.

I have thus been able to realize at will this morbid receptivity of experimentors, where the vital reaction of the cell yields under the influence of morbid conditions; in my particular case this initial condition was the cold.

Well, I have succeeded in conquering the susceptibility of my pharynx, and in raising its resisting power against the cold. I have attained this, thanks to intra-buccal applications, by gargling with cold water of lower and lower temperature.

I commenced with cold gargles of 15° C. (59° F.), then by lowering the temperature progressively I arrived at 10° C. (50° F.), at 7° C. (about 45° F.) extreme limit of very cold temperature; finally I ended with the excessive cold of 5° C. (41° F.); these last applications were of very short duration and repeated three times a day.

Cold application of short duration gives a salutary physiological shock; it excites the circulation and the mutation of the material in the last capillary divisions; it enlivens the organic exchanges in the peripheral extremities; it reawakens the need of preparation.

In the alveolo-dental region, where paresis of the nutritive and assimilatory functions is evidenced by a defective calcification, by a circulatory stagnation, by passive congestions, the perturbing impression of cold to me appears a suggestive medium and worthy of serious consideration.

The constitution of the dental tissues, like that of the tissues of the other organs, is closely connected with education and the physical exercises which are imposed on them during the period of their development. Mastication is the natural exercise for the dental apparatus. Thus, the culinary preparation which the foods have to undergo leaves to the teeth insufficient exercise. The pulp stricken with this systematic inaction slowly and irregularly calcifies, producing a poorly bound dentine, without the necessary resistance against the morbid influences.

This is one of the great reasons for this fragility of the dental tissues, for this frequency of caries in civilized peoples.

The application of cold water regularly several times a day in the form of short gargles, or better still with a brush soaked with cold water, would be able by its vivifying action to reawaken the nutritive activity

of the dental pulp, and would favor the formation of a denser and more perfect tissue. Concurrent with the judicious employment of the brush, *the application of cold during the period of the eruption and the definitive development of the permanent teeth* will constitute an excellent resource of prophylactic hygiene for the dental apparatus, and will contribute to attenuate the troublesome consequences of the excess of modern refinement.

Devitalization of Exposed Pulp.

In pulp exposure, place the devitalizing medicine in the dentine away from the point of exposure. You will thus secure devitalization with little pain, and very often more rapidly than if placed directly upon the exposed pulp. If the caries which exposes the pulp is upon the distal portion of a molar, then make a new cavity upon some mesial aspect of the tooth, and into that place the devitalizing medicine. This new cavity afterwards gives direct entrance to anterior roots, which is usually necessary for a perfect operation.—*Western Dental Journal*.

Chloroform in Dentistry.

Dr. F. Hewitt contributes an article to the *Lancet* and in concluding his communication he sums up the evidence against chloroform, and urges that, in the interests of the public and of the medical and dental professions, it should only be used on the most exceptional occasions. He maintains that the safest anæsthetic should be employed for each particular case: nitrous oxide for short operations; ether for longer ones; chloroform only being applicable when the state of the patient is such that ether cannot be given. The chief reason why ether is not more widely used is that there is a want of proper instruction in ether-giving. When it is administered skillfully, the anæsthesia is equal to that of chloroform from the operators point of view, and far safer. The surroundings in dental operations are not nearly so favorable, so far as the anæsthetic is concerned, as in ordinary surgical cases. Moreover, the postures, which are most convenient to the dental surgeon are the very worst from the anæsthetist's point of view. In addition to this there is the point of extreme importance, *viz.*, that as the operation of tooth extraction under general anæsthetics often involves asphyxial condition, either from posture, the presence of blood, the effects of the anæsthetic itself, or other causes, chloroform is contra-indicated, owing to the liability of the circulation of a chloroformed patient to rapidly fail in the presence of asphyxial state. This is not so with nitrous oxide or ether.

Orthodontia Technic.

In an essay read before the San Francisco Dental Association in August, Dr. H. D. Noble gives an outline of the practical work required in the dental college. From this article in the *Pacific Stomatological Gazette*, we abstract as follows:—

“I first give students a piece of German silver plate, No. 23 gauge, to roll to No. 27, and 34 or 35. The No. 27 is used for making tubing; it is cut into strips about one-quarter of an inch in width; one end is tapered and the sides slightly curled to facilitate its curling while being pulled through the draw-plate. The drawing is repeated until the tubing is reduced to the required size. The tubing is then ready to be cut into proper lengths to solder on bands, making jack-screws, etc. Care should always be taken to have the seam in the tubing next to the band when soldered to a band to avoid the possibility of its opening when pressure is applied, which it might do if otherwise soldered.

For bands the material is rolled to No. 35, and even No. 36 gauge, to facilitate the introduction and adjustment of the bands on tooth or teeth. It requires very little separation of the teeth to get a band of that thickness in position.

There are a number of materials used for making regulating appliances, viz.: platinum, platinum gold-plated, gold, German silver (which is considered a most excellent material for most any kind of a regulating appliance, but, on account of its tarnishing, is rarely used in the anterior part of the mouth; here platinum, or platinum gold-plated is preferable; ligatures and vulcanite are also used.)

A piece of wire, No. 13 gauge is drawn down to No. 17. The wire is used for jack-screws, drag-screws, bands, burs, etc. They are also instructed to make steel taps and drills. They take an old instrument, draw the temper, then, by holding it between the thumb and fingers of one hand, keep it rolling while it is being filed with the other. This makes the instrument perfectly round, and it is reduced to the proper size. The end is shaped like a drill, and is made just small enough to pass through the hole in the screw-plate in which you want to cut the threads. Part of the instrument is filed square to give sharp, cutting corners, the thread is continued for a short distance, encircling the instrument. It is now ready for tempering, which requires considerable skill in getting the right temper in the right place. It should have a spring or blue temper in the shank, and a straw or cutting temper in the threads and drill. It is then ready for use.

Having once learned how, one is enabled to make any size tap and drill, or in fact most any kind of instruments. If at a great distance

from a supply store, a dentist will find it very convenient and save lots of time if he is able to step into his laboratory and turn out the instruments he is urgently in need of. By the aid of a tap or drill we are able by careful manipulation to cut threads in any material we may wish to make nuts of.

A nickel five-cent piece is excellent material for making nuts. The preparations of the nickel is to smooth one side on a corundum wheel, then mark it out in squares a little larger than you wish the nut; then drill holes in the center of the square with your engine and small drill; then the drill on the end of your tap will enlarge the hole sufficient to allow for the cutting of the threads; saw out the little square with a metal saw; then with a little dressing the nut is ready for use.

German silver square tubing is also very useful for nuts. This is made by taking No. 23 German silver plate the proper width, pulled through a round draw-plate until the edges meet; then solder the seam and pull through a square draw-plate until reduced to proper size. This can be cut into any lengths desired; where much pressure or strain is required, a long nut is more serviceable than a short one.

The Matteson cap is also an excellent article in use to assist in regulating teeth. This is made by taking an impression of the tooth or teeth, making the die and counter in Melotte's metal, and swaging cap to cover coronal or cutting surface of the tooth and passing part way down the sides of the tooth.

The cap is especially useful in regulating partially erupted teeth where it is almost impossible to cement bands on. It may also be swaged to cover several teeth to open the bite when necessary."

The Role of Dentition in the Etiology of Diseases in Children.

Arnstein describes two cases in which convulsions could only have been produced by dentition. From his own experience, as well as from that of others, he considers that reflex convulsions from dentition are possible, but rare. Out of 82 cases observed by him, in only 6 could the connection with dentition be found; in the remaining cases the causes were, in 27, the beginning of acute infectious disease; in 12, diseases of the brain; in 29, diseases of the stomach and intestines; in 6, trauma or burns; in 2 the cause was not explained.

But, although he seldom observed convulsions from dentition, he very often noticed abnormally increased sensibility of the central nervous system, expressed by general irritability, uneasiness, peevishness, crying, etc. Among other diseases in connection with dentition the

author mentions affections of the gums and buccal cavity, and also an aphthous affection; in the latter, however, dentition was not the *causa efficiens*, but only prepared the ground for the entrance of parasites. He quotes Monti as having proved by statistics that aphthæ are seldom observed in children under six months nor after the third year, but most frequently during the first and second year, when the greatest cutting of teeth takes place. He believes that dentition is a physiological phenomenon not causing any morbid symptom, but that in many cases pathological symptoms appear, of a reflex character, involving the central nervous system and buccal cavity. It is doubtful whether diseases of the lungs and abdominal cavity as well as inflammation of the membranes of the brain are ever occasioned by dentition.—*Universal Medical Journal*.

Effervescence after Pyrozone not Necessarily a Sign of the presence of Pus.

In an editorial in the *Odontographic Journal*, Dr. J. E. Line, shows that effervescence after the use of pyrozone is not necessarily a sign of the presence of pus as generally supposed. He says:—

“In reading the discussions of pyrozone in general practice and in dentistry, we find it spoken of as ‘a diagnostic agent for the detection of pus, causing instant effervescence . . . thus of value as a diagnostic agent in the detection of pus in deep-seated wounds.’ It is said also that ‘purulent matter possesses the power of liberating the oxygen from the solution, as evidenced by the ebullition of bubbles of gas.’ Cotton saturated with pyrozone was let remain ‘until the appearance of foam indicated that pus had been found.’ Again ‘when you spray a set of teeth you will be surprised to see the amount of pus that will appear around the sides of the teeth.’ Still another gentleman speaks of it as a ‘reliable and an infallible detector of pus.’ From which, together with the context, we conclude that effervescence is proof of the presence of pus.

To dispose of this notion, we suggest a repetition and amplification of the following experiments:

1st. Saliva from a pus-free patient was drained into a test-tube and let stand until the natural foam had disappeared. A few drops of 3 per cent pyrozone were then added, with active effervescence as a result.

2d. Mucus from the nares of a small boy with a ‘cold in the head’ was collected in a test-tube, pyrozone added, with a result similar to that obtained from the treatment of saliva. Mucus from the nares of another patient was spread upon a sheet of glass and sprayed with pyrozone from

the ordinary atomizer. Instantly the film of mucus became opaque; in other words, it effervesced.

3d. A test-tube of milk was treated with pyrozone, with the result that it became effervescent, but not very actively so. Within five minutes, however, the foam constituted the upper fourth of the white contents of the tube. Repetition of the test made the time and degree of effervescence dependent more or less upon the richness of the secretion.

4th. The teeth and gums of a pus-free patient, who had lunched at the usual hour but had not made any attempt to remove the remains of the meal, were sprayed six hours afterward with pyrozone, and as a result effervescence showed itself on all sides. Mucus, saliva, and organic matter in a more or less active state of fermentation, constituted the coating of both teeth and gums.

From these tests it is conclusively shown that while pus may be present, effervescence is not necessarily proof of the fact. Peroxid of hydrogen gave not very dissimilar results."

Antral Suppuration a Cause of Menstrual Suppression.

Dr. R. H. Cool cites the following interesting case in the *Pacific Stomatological Gazette*:—

"Recently a German woman, aged 28, married and having two children, and who had been suffering for over three years with almost constant neuralgic pains and with paroxysmal exacerbations, extending over the entire side of the face and head, presented herself to me. Upon an examination of her mouth the dental organs appeared healthy, the only carious tooth being an inferior molar, which had been properly filled; the buccal surfaces of the gum had the appearance of health. Upon examination of the interproximal spaces a wire probe was inserted between the bicuspid upon the right side and disclosed a carious condition of the alveolar process. Under gentle pressure the probe passed through the floor of the antrum, and upon the withdrawal of the probe a discharge of purulent pus followed. The patient immediately felt relief from pain. A subsequent operation for treatment of antral suppuration caused entire relief, not only of the neuralgic affection, but also of a nasal catarrh, from which she had been suffering.

Another notable incident of this case is, as it afterward transpired, she had also been suffering from menstrual irregularity, and at this time her period was overdue. Upon the relief of the abscess, strange as it may appear, the menstrual flow reappeared and has been regular ever since, much to her comfort and happiness."

Improved Amalgam Fillings.

In an article in the *Zahnärztliche Rundschau* and copied in the *Dental Digest*, Dr. M. S. Maunhardt says, regarding the making of amalgam fillings:

"I advise that subsequent to the preparation of the cavity, the cavity walls be lined with tin-foil, which must be pressed against them tightly, thus perfectly dressing them, then prepare the amalgam as usual and pack it in the cavity. But care must be taken that the tin-foil overlap the margins of the cavity, then after some days the superfluous tin-foil can be trimmed away and the filling with its tin-foil border will take a high polish.

In some classes of cavities, such as are somewhat anterior, you may employ platinized gold, such as is used in porcelain inlay fillings, as a lining for the cavity. One might use platinum alone, but I find that the amalgam combines more readily with the former. When using the platinized gold it must be remembered that the overlap should be left undressed for some days. After some lapse of time you will be surprised at the perfect margins and the absolute absence of discoloration in a tooth thus filled."

Gold Clasps for Artificial Dentures.

Dr. W. Loewenthal, in the *Cosmos*, says:

"In making gold clasps for artificial dentures I have found that in almost every instance the tooth or teeth to which they are attached finally become affected through decay caused by the contact of the metal,—a condition not so much to be expected from rubber clasps, which however, are not as strong. Metal, though, being indispensable, the idea of combining both the strength and protective qualities suggested the idea to me of flowing rubber over the serrated inner surface of the clasp metal."

Use of Lactic Acid.

Dr. W. J. Younger, in *Stomatological Gazette*, says:

"I introduced lactic acid, for the reason that I found it to be a most excellent absorber of lime, and it did not act upon the soft tissues. Sulfuric acid acts alike upon the soft and hard tissues—the healthy as well as the diseased. Lactic acid has this superiority over sulfuric acid, that it does not act upon the soft tissues except to stimulate. I use it not only when I want to dissolve for necrosed bone, but also as a solvent of tar-

tar in pyorrhea. I found that in that operation its effect upon the soft tissue is to stimulate granulations, and re-unite the gum tissue with the tooth, something that sulfuric acid cannot do."

Be Considerate.

The routine of work often becomes wearisome. If no perfect result is in view, it is sure to be so. Labor is agreeable only in the result gained. The dentist who hurries from one patient to another, intent upon "turning out" so much work, seldom obtains the rest and relief found in perfect results.—*Western Dental Journal*.

EDITOR'S NOTES.

Dental Legislation in Ohio.

THAT dental legislation in Ohio as it exists today is not all that could be desired, has been clearly shown during the past year; and ways and means are now being considered for either an amendment to the present law or the enactment of a new one.

The great need for dental laws, that will protect the people from imposition, in any and all states, is recognized by the dental profession generally, yet our legislative bodies have been slow to comprehend this necessity. When the present law was under consideration several years ago, the legislators required the elimination of several important features in the original draft before they would promise to vote for its passage. Not the least of these was one empowering the State Dental Society to submit a list of names of reputable practitioners from which the governor should appoint the members of the board. Members of the legislative bodies argued that this would give entire control to the State Society, whose membership was composed of only about one-tenth of the practicing dentists in the state, and this would be unjust to those outside. The absurdity of this at the time was apparent to every member of the committee, but rather than have *no law*, they submitted to the changes. We hope that every legislator who then held these views has seen some of the

results that have followed and is now ready to concede that the State Dental Society, a body made up of representative men in the profession and which invites to membership any and all reputable practitioners, is the proper body to suggest names of qualified men from which the governor of the state should select members for the examining board. To vest sole power of appointment in the governor seems unjust, not only to the profession but to the governor himself, as political endorsement, rather than qualification, is apt to influence him in his selection. We do not want to be understood as referring to any particular board or its members when we say this, but simply to put the matter in its right light and point out the advantage of empowering the society to submit a list of names for appointment on the examining board.

At a recent meeting of the State Dental Society, held in December, dental legislation was thoroughly discussed. During this discussion members of the examining board were censured for endorsing and recommending some proprietary dentifrice, the composition of which they knew not. Also, for licensing some applicants, who, at the time of examination, were only freshmen and juniors in certain dental colleges and therefore could not have been thoroughly qualified to practice dentistry. The board argued that the law was faulty and that if the applicants passed the required examination, they had no power to withhold a license from them, etc.

Wherever the fault lies, we hope it will be corrected, for it is certainly an injustice to the profession and colleges to make regular practitioners out of freshmen students. Personally, we would like to see the law so amended as to require possession of a diploma before licensing to practice in the state. The committee on legislation, appointed by the society, have, however, a bill drawn up, that, if it passes, will cover the ground thoroughly and be a credit to all.

The medical profession in the state have had many reverses in their attempts to secure proper legislation and they are anxious to join with the dentists in an attempt to get just laws enacted. In whatever manner it is presented, we hope it will be successful. This is a matter that deeply concerns every dentist in the state and it is the duty of each to do all he can, personally, toward securing the passage of a suitable law.

New Publications.

DUNGLISON'S DICTIONARY OF MEDICAL SCIENCE, 21st EDITION WITH APPENDIX. By Robley Dunglison, M.D., LL.D., Late Professor of Institute of Medicine in the Jefferson Medical College of Philadelphia. Edited by Richard J. Dunglison, A.M., M.D. New (21st) edition, thoroughly revised, greatly enlarged and improved, with the Pronunciation, Accentuation, and Derivation of the terms. In one magnificent imperial octavo volume of 1225 pages. Cloth, \$7.00; leather, \$8.00. Thumb-letter index for quick use, 75 cents extra. Lea Bros. & Co., Publishers, Philadelphia, 1895.

Dunglison's Dictionary has been for more than sixty years the unquestioned medical standard of the English-speaking race. During this time it has passed through twenty-one editions, the most extensive revision being that of two years ago when it was remodelled and forty-four thousand words were added. During this brief interval medical progress, always advancing at accelerated speed, has enriched the terminology of the science with many new words and extensions of former meanings. Standing as it does as the foremost medical lexicon "Dunglison" occupies a position of high responsibility to the profession, and the appearance of this Appendix shows that both the Editor and the Publishers appreciate the duty of keeping the great work always in the van.

Its features as a practical work of reference are well-known, as it abounds in tables of value, readily accessible, such as Dosage, Antidotes for Poisoning, etc., etc., and its articles on the various diseases deal with their clinical features and treatment. The work has always been remarkable for its moderate price in comparison with its intrinsic value, and no advance will be charged owing to the addition of the Appendix.

THE DISEASES OF CHILDREN'S TEETH, THEIR PREVENTION AND TREATMENT. By R. Dennison Pedley, M.R.C.S., L.D.S., London; J. P. Segg & Co., Publishers, America; S. S. White Co., Philadelphia.

This book has been prepared for the student and practitioner

of medicine yet it contains much information that is useful to every dentist.

There is no question but that medical students and practitioners need more knowledge about the teeth and their diseases and we hope that this work will be the means of widely distributing this information. The contents of the book are Structure of the Teeth—Eruption—Caries—Inflammation of the Pulp—Periodontitis, alveolar abscess—Necrosis and other sequelæ—Irregularities of the Teeth—Hygiene of the Mouth—Treatment of Diseases of the Teeth, etc.

On page 134 the author in the chapter on oral hygiene says: "Personal cleanliness is recognized as a valuable aid, both in the treatment and prevention of many diseases. It is, nevertheless, a curious fact that in very few works on medicine is mention made of the necessity for keeping the mouth in a healthy condition during childhood, though careful directions are given as to personal hygiene from infancy onward, of other parts of the body."

All in all it is a valuable work and it will repay the dental practitioner to buy the book for his reception room table or to loan to his fellow physicians and thus distribute this valuable knowledge.

PEARSON'S DENTISTS' APPOINTMENT BOOK for the vest pocket. Published by R. I. Pearson & Co., Kansas City, Mo. Price 50 cents.

A most convenient appointment book for every dentist. Answers all purposes and is always with you. If you have not used it, get one.

SOCIETIES.

Inter-State Dental Meeting.

A meeting of the General Executive Committee of the Inter-State dental meeting was held in Kansas City, at which each of the four states (Iowa, Nebraska, Kansas and Missouri) was represented, and the following action taken. The place and time of

meeting was fixed at Excelsior Springs, Mo., June 23-26, 1896.

Dr. Henry J. McKellops was chosen Supervisor of Clinics ; to be assisted by Dr. L. K. Fullerton, Iowa ; Dr. O. M. Heustis, Neb. ; Dr. C. B. Reed, Kan. and Dr. H. S. Lowery, Mo.

Much enthusiasm was reported from other states, and it is believed that this will be one of the greatest dental meetings ever held in the west.

S. C. A. RUBEY, Sec'y.

J. P. ROOT, Chairman.

Odontographic Society of Chicago.

THE annual election of officers of the Odontographic Society of Chicago, held Dec. 9, 1895, resulted as follows: President, C. E. Meerhoff; Vice President, E. R. Carpenter; Secretary, H. H. Wilson; Treasurer, Edmund Noyes. Board of Directors: R. B. Tuller, C. E. Bentley, J. G. Reid. Board of Censors: A. B. Allen, H. A. Drake, G. W. Schwartz.

H. H. WILSON, Sec'y.

Union Dental Meeting.

A UNION meeting of all the dental societies of Western Pennsylvania and Eastern Ohio, will be held in Pittsburgh, Jan'y 21, 22, and 23. Prominent men from both east and west have promised to attend and contribute to the interest of the meeting. Papers and clinics of special value will be given and all dentists who reside within reasonable distance should make a special effort to attend. You will be treated royally.

Erratum.

On page 521, Oct. OHIO DENTAL JOURNAL, 15th line, 7th word should read *one ounce* of water, instead of *one drachm*. A mistake of the journal from which we copied it.

THE OHIO DENTAL JOURNAL.

VOL. XVI.

FEBRUARY, 1896.

No. 2.

CONTRIBUTIONS.

Correction of a Double Difficult Case of Irregularities of the Teeth at Thirty Years of Age.

(From a Forthcoming Work.)

BY J. N. FARRAR, M.D., D.D.S., NEW YORK CITY.

THIS case was that of a man about thirty years of age, large in frame, and having a facial expression too unpleasant to be clearly described. The upper lip had fallen in upon his receding upper teeth and rested upon the ends of the lower teeth, which protruded, causing an appearance resembling that of a bull-dog. (See Fig. 3).

The upper incisors, besides inclining inward, were turned "out of true," in their sockets, and the side teeth were so irregular that antagonism was extremely imperfect. The tongue was so encroached upon by this "saddle arch" that it was impossible for the man to speak clearly; in fact, his articulation (in speech) was so faulty that it was only by considerable effort that he could make himself understood. (See Figs 4 and 5).

This case was very difficult to correct, for it not only required enlargement of the upper arch and evening of the lower one, but several of the teeth required to be turned and more had to be

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swayed to one side in order to place them evenly upon each side of the median line of the face.



Fig. 1.—Left side of the Dental Arches before the Operation.



Fig. 2.—Left side of the Arches after the Operation.

The left upper lateral becoming arrested in its process of eruption, also required elevating; then too, the bones, because of the age of the patient, were hard and very difficult to absorb, and still more difficult to bend, by any practicable degree of force. In addition to these difficulties the teeth were subject to various "tricks" (peculiarity of behavior) rendering it necessary for the case to be seen daily. By powerful mechanisms and perseverance, however, on the part of both patient and operator, the case was satisfactorily corrected. (See Fig. 2).

This case was one of the class that required very firm anchorage; in other words, the operation was so extensive, that it was only by such anchorage that it could be successfully completed;

fortunately the arrangement of the teeth was such as would meet the demands. (See Fig. 8).



Fig. 3.—Profile of the Lips

To make my explanations of this operation easily understood, the different stages of the process and the different mechanisms used, will be diagrammatically illustrated by twenty-seven figures, arranged in their proper order.* The stages of the process were

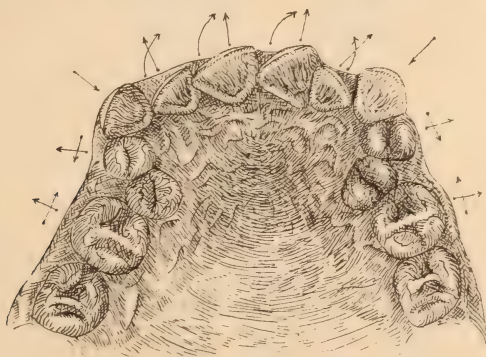


Fig. 4.—Upper Teeth before the Operation.

*All these figures are reduced one-fourth in size. .

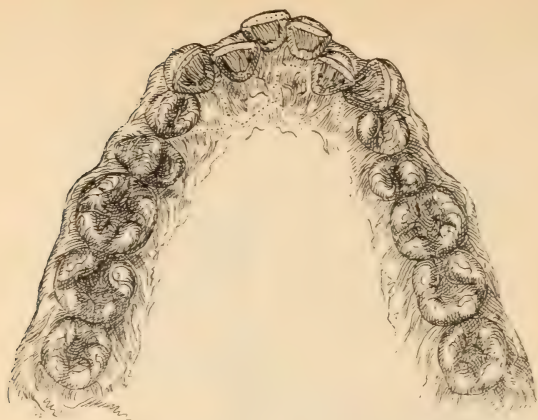


Fig. 5.—Lower Teeth before the Operation.

nine in number, and were performed in the following order, viz :

- 1st. Regulation of the lower incisors.
- 2d. Moving forward of the upper incisors.
- 3d. Moving posteriorly the upper cuspids and bicuspid.
- 4th. Moving lingually the upper cuspids.
- 5th. Turning the upper incisors.
- 6th. Elevating the left upper lateral incisor.
- 7th. Swaying to the left eight anterior upper teeth.
- 8th. Moving outward the lower bicuspid and inward the

lower cuspids.

The face was one of a class, for which the greatest improvement possible to be made, was balancing of the features, rather than the copying of Apollo Belvidere. By measurement it was found that to preserve all the upper teeth would not only make the dental arch too long for the best facial contour, but the plane of the antagonizing surfaces of the two arches, would not permit the front upper teeth to overhang the lower; therefore, they could not form a "matrix antagonism" with each other, so necessary to retain regulated teeth in their proper places. Even if the planes were such as would permit overhanging, the retention of all the teeth would place the upper incisors so far forward of the lower, that there would not be a matrix, and the upper teeth therefore would probably become irregular again.

To prevent grossness of facial expression, it was necessary to avoid a long upper arch, and to accept a shorter one, by extracting

a bicuspid on each side; by this act the antagonism of the front teeth, however, would be what is called a "square on bite," but there would be a slight bevel in the antagonism, just sufficient to prevent recession of the upper teeth. This bevel, together with the "shoulder to shoulder" contact of the teeth, would be sufficient to keep each other in line, similar as staves in a barrel support one another.

In reforming the profile contour of the face, the arrangement of the teeth upon what is regarded to be the "normal occlusion," is not always best; even if this patient had thin lips, the retention of all the upper teeth would have caused the lips to protrude more than would look well; but having thick lips (as he did), it would have caused a course and unintellectual profile. But with a "square on bite," all things considered, the contour and expression of the lower third of the face could be made to more nearly harmonize with the upper two thirds. Upon this line of action, therefore, the operation was begun and carried through with a result that was gratifying to all interested parties. Probably this feeling on the part of the patient and his family was greater than it would have been, had there not been made a previous attempt at correction (before I saw the case) at great cost of time and money that ended in a humiliating failure.

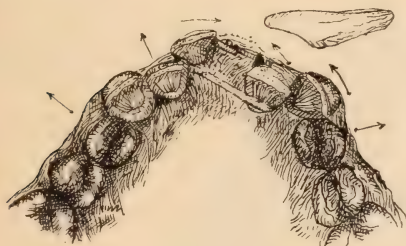


Fig. 6.—Making space to correct the lower incisors, by extraction of a tooth, and evening the remaining teeth.

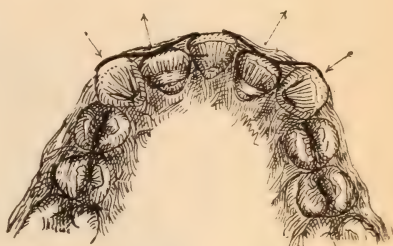


Fig. 7.—Drawing forward the lateral incisors and moving back the central and cuspids.

1st Stage. This complicated and difficult operation was conducted in an apparently mixed order of stages, yet in fact, it was conducted along a carefully laid line; acting upon one jaw, and then upon the other, fitting one step to benefit another, until all harmonized. The first act in the first stage, was extraction of the lower right central incisor, after which, the three remaining incisors were moved into line between the cuspids. This was

done by the use of a gold clamp band and two double arm ferules. (See Figs. 6 and 7.) The clamp band embraced the two left incisors and the right lateral, in order to move the latter farther than the former. When these incisors had been moved sufficiently to liberate them from behind the cuspids, the laterals were moved anteriorly, and the left central posteriorly by the two-arm ferules, arranged upon the teeth, as represented in Fig. 7. The wire arms on the ferules were so formed that the mechanisms required some force to so apply them that they would cause opposite movements of the teeth. (See arrows Fig. 7.) To keep up the force these machines were removed on alternate days, the wire arms rebent (posteriorly) and reapplied so that the force was not only felt by the incisors, but also by the cuspids. This moved all of them in the various directions indicated, in the figure, by arrows.

Having brought these teeth into their proper places they served as a guide, to the extent of forward movement of the anterior upper teeth, that was necessary to effect the best profile of the face. Further correction of the lower dental arch was now suspended until the latter part of the operation, when the process of correction of the upper teeth was far advanced toward completion.

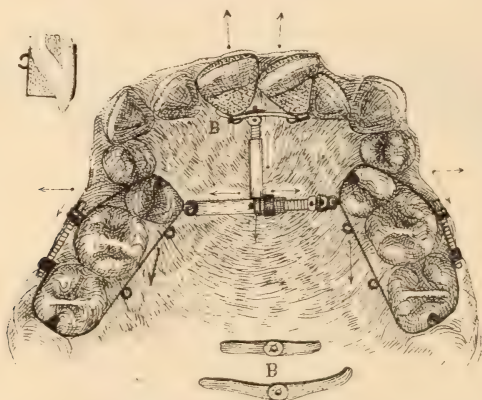


Fig. 8.—Moving Forward the Upper Central Incisors by a Screw-Jack—(A).

2d Stage. The second stage in the operation was the moving forward of the upper incisors by a screw-acting mechanism anchored to the side teeth as represented in Fig. 8.* The

*The letter A at the end of the inscriptions indicates the mechanisms invented by the author.

mechanism consisted of two clamp bands, a transpalatine screw-jack, connecting these bands, and a radial screw-jack, connecting the middle of the transpalatine jack with the central incisors. To enable the latter jack to bear upon these teeth, there was interposed between, a stiff gold bar, B, of sufficient length to rest against them. This bar was held in place upon these centrals, by lugs soldered to ferules cemented upon them. (See section of one of them upon a central, in the upper part of the figure).

The power of this radial jack was soon felt by the centrals, by turning its screw. Although the reactive force of this jack upon the anchorage teeth, tended in the direction indicated by the arrows, it did not materially disturb them. The peculiar, and advantageous arrangements of these side teeth, constituting an extraordinarily firm anchorage, was not overlooked; all of them were pressed into service until the four anterior teeth had been moved sufficiently forward to be nearly upon the proper line.

The turning of these four incisors was deferred until a later part of the operation, because teeth turn easier after the decalcifying process in the sockets, has been established by other movements of the teeth, than by making the turning of the teeth cause the decalcifying changes for themselves. Upon the subject of saving time and trouble by calculations of this kind, in the various movements of teeth, much might be said, but as it would not be strictly relevant to our present subject, only incidental references will be made to them.*

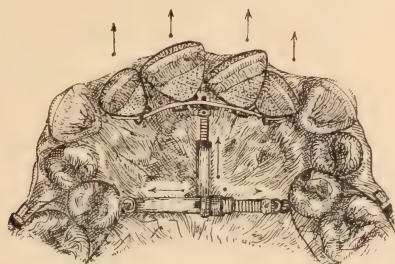


FIG. 9.—Continuing the operation by a bar of sufficient length to move four incisors (A).

While this radial jack was doing its work, its base of support (the transpalatine jack) was doing double duty. By being gradually lengthened it not only made a rigidly firm support for the

* These points are clearly set forth in Dr. Farrar's work.—ED.

radial jack, but at the same time it slowly widened the dental arch somewhat. As desired the movement of these side teeth, during this period of the operation, was accomplished through absorption of the sockets; not by bending of the bone.

When the radial screw-jack had moved the centrals sufficiently, for their posterior sides to be on line with those of the laterals, the bar, B, was removed and replaced by a longer one that would bear upon all the incisors. (See Fig. 9).

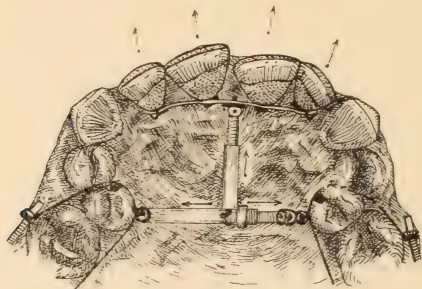


Fig. 10—Appearance at a still later time in this stage of the operation. (A)

3d Stage. After this longer bar had moved these teeth forward, nearly to the proper line of the arch, (see Fig. 10), but not fully to the line, (for reasons to be given later), the time had arrived to begin to move posteriorly, and also lingually, the upper cuspids, which still remained too far forward and too prominently outward. This act marked an important period in the entire operation, because it not only necessitated a change in the regulating mechanism, but also the loss of two teeth. (See Fig. 11). To make room to form an arch of the proper length, the second bicusps were extracted; thus the track for free action was established at once, and at the same time the tongue was given greater freedom than it had enjoyed for years; in fact, for a day or two after this time, the tongue (which was large) acted like a "liberated prisoner." The language of the patient improved from this time on until the articulation was perfect.

Fig. 11 illustrates the case after extracting three teeth, and when the new machinery was applied. This, however, was only a part of the entire machinery; the other parts were added as the operation advanced. This part consisted of two clamp bands, each having an arm projecting anteriorly, to hold the incisors in

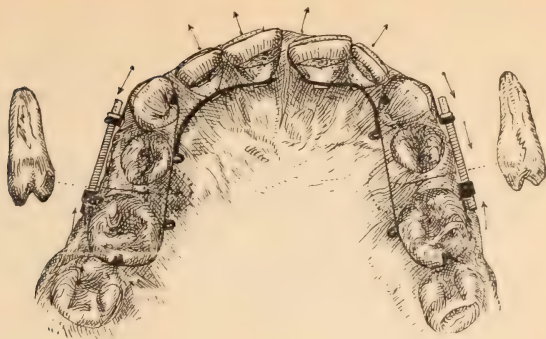


Fig. 11.—Moving the cuspids posteriorly after having extracted the second bicuspids.

their new places. The clamp bands, not only served as anchors to hold these spring wire arms against the incisors, but they also moved the cuspids posteriorly, a short distance, just sufficient to liberate the incisors, so that they could be turned. Before the cuspids were moved (posteriorly) the first bicuspids were moved up against the molars by interposing wooden wedges (not shown) between them and the cuspids, while this mechanism was upon the teeth. The molars (which were now the only available anchorage teeth) were as a natural consequence moved forward a short distance while the cuspids were being drawn back by the bands, but the molars did not move sufficiently to do harm.

4th Stage. When the cuspids had been thus moved, they stood too far outside of the proper arch and therefore required

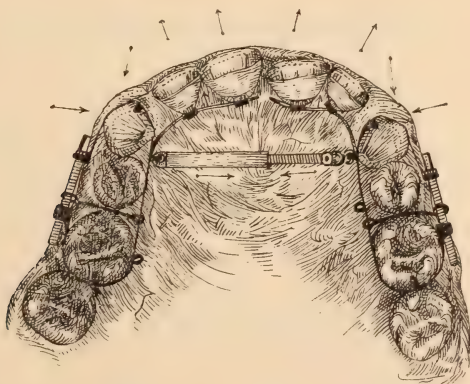


Fig. 12.—Moving the cuspids lingually by a screw-jack (A)

to be moved lingually; this was accomplished by a transpalatine screw-jack. (See Fig. 12).

Before leaving the subject of moving the cuspids posteriorly by the clamp bands, it may be well to mention that no transpalatine jack was used while they were being moved, to prevent the narrowing of the arch, because the cuspids, were so far outstanding, and the molars being drawn forcibly against the anterior walls of their sockets, enabled the bands to hold the bicuspid from moving lingually; and none of the teeth could move in any other direction than along the shortest line of the force between each cuspid and molar. Had the dental arch been widened, by opening the medial suture of the jaw-bone, the result would have been different, i. e., the two sides of the dental arch would have approached each other.

Fig. 12 illustrates the case after all the side teeth (on each side) had been moved in contact with one another, and when the cuspids were being drawn toward each other, by the screw-jack connecting the anterior part of the clamp bands. The effect of the entire mechanism, as it now acted upon the different teeth, is indicated by arrows. The black lines across the clamp bands, between the molars and bicuspid, represent platinum wires that were improvised for preventing the bands from sliding upward upon the molars.

(To be continued.)

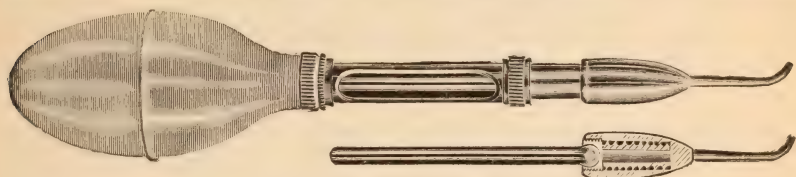
The Harvey Warm Air Blow Pipe.*

BY H. F. HARVEY, D.D.S., CLEVELAND.

I THINK it will be admitted by all, that frequently more pain is caused by the use of an air blast, or "chip blower," during the preparation of cavities in teeth for filling than in all the rest of the operation. The pain caused by the use of a "chip blower," or the instigation of the pain so caused, depends upon three principal factors, viz.: The *temperature* of the air, the *force* of the blast, and the *distance* the nozzle, from which the air blast is delivered, is held from the cavity. The "blower" which I show and pass around for your inspection, is the result of con-

*Presented at the Ohio State Dental Society, December, 1895.

siderable experiment in this direction, and as you see, the temperature of the air is registered by a thermometer, the bulb of which is set into the under bulb of the blower so that when we have a temperature that is the most acceptable to a sensitive



(Patent applied for.)

cavity we can always hold it at that point and know just what we are using. The force of the air blast is controlled by the size of the opening through bulb or nozzle, and this should not exceed No. 20 Amer. gauge. The distance of course is regulated by the operator, but it should be uniform. The barrel of a hypodermic syringe was used in the construction of the blower, and it is not a complicated affair. By a little judgement in the use of this instrument the pain incident to the use of a "chip blower" may be reduced to a minimum.

The Use of Phosphorated Oil in Dentistry.

BY HERMAN PRINZ, HALLE, GER.

PHOSPHORATED Oil is a sovereign remedy for removing violent pain in periostitis resulting from a carious tooth. The cavity should be cleaned and dried and a few drops placed on cotton packed in the tooth, and is held in place by gutta percha. The pain will vanish in a few minutes. It can be kept in the cavity for days and weeks to the greatest comfort of the patient. The action is not well understood, but Dr. Albrecht claims it is due to the fatty degeneration of the tissues brought upon by the phosphorus in this form. Phosphorated oil is prepared by dissolving one part of dried phosphorus in about eight parts of heated expressed oil of almonds. The U. S. Pharm'œ preparation is 1:100.

Capping Pulp.*

BY DR. GORDON WHITE, NASHVILLE, TENN.

THE following method has been successfully used for a number of years, the results for the past four years having been carefully noted, during which time more than a hundred pulps have been capped by this method, the cases carefully watched, and only five failures recorded to date. Two of the cases were hopeless from the beginning, having given trouble for three months or more, and were capped at a risk, as an experiment. Two others had ached for a short while, but without, as it seemed, any inflammation. The fifth case developed a pulp stone, necessitating removal of the pulp. We are persuaded that, in the field of dental operations, the capping of the dental pulp is as successful, properly performed, as the average dental operation . . . Gentlemen: capped pulps do live.

My method of capping is as follows: The patient rinses the mouth with as warm water as can be used comfortably, to which is added a little alcohol or a few drops of an antiseptic. The cavity is then washed with warm water from the syringe and the cavity excavated as usual and occasionally wiped out with a small pledget of cotton saturated with chloroform. Using sterilized scissors and foil pliers, a made cap is cut "from a prescription blank" and dipped in chloroform which quickly evaporates leaving the paper of its original stiffness, and sufficiently sterilized. On this cap with a small pointed sterilized instrument is placed the smallest particle of a chloro-percha solution to the chloroform and in making the solution, fifty grains of aristol to the ounce of chloroform should be added. This little plaster is turned over on the point of pulp exposure and gently pressed to position with the smallest piece of spunk, and a few drafts of hot air thrown on the cap which evaporates the chloroform from the solution, leaving the cap sticking to its position, when thin cement is flowed over it and the filling inserted as desired.

DISCUSSION.

H. J. McKELLOPS gave the method which he uses, whether the pulp is actually exposed or merely sensitive to heat and cold.

* Abstract of paper read at Southern Dental Association, Nov., 1895.

He cuts a cap from asbestos paper and covers it with a paste of iodoform and glycerin. He is satisfied, that any one who tries this method will get good results.

DR. J. Y. CRAWFORD emphasized the importance of differential diagnosis. He is convinced that when properly handled, and under proper conditions, the vitality of an exposed pulp can be conserved. He considers pure beech-wood creosote very valuable in this connection. In the use of the zinc cements, it is important to have the finest, purest, cleanest white oxid of zinc from which every trace of arsenic has been removed. Before deciding to cap a pulp we must have the precedent history of the pulp, a knowledge of the constitution and temperament of the patient, and must consider the environments of the tooth, the condition of the tissues, the character of the dentine and the age of the patient; the younger the patient, the more important the preservation of the vitality of the pulp, that it may continue to perform its functions in the nutrition of the tooth.

Whenever the dentine is found non-sensitive it may be regarded as a pathological signal; an evidence of paresis on that side of the pulp, the dentine being partially devitalized.

This condition is often found in young sixth-year molars; cement flowed over this portion of the tooth often causing the pulp to reassert itself, may restore the dentine through renewed vitality. If sensation is not restored within from twelve to twenty-four hours, trouble may be anticipated sooner or later.

DR. J. H. BROZER uses the balsam on a cap of paper or tin-foil.

DR. JNO. S. THOMPSON cuts a paper cap from that part of an envelope which is gummed, the U. S. Government using only a pure antiseptic dextrine paste. Moistens the cap on the lip or tongue of the patient and applies to point of exposure.

DR. C. L. BOYD devitalizes the pulp in every tooth in which the dentine is not sensitive about the cornua. For a traumatically exposed pulp he uses a mixture of oil of cloves, carbolic acid and beechwood creosote under an inverted disk, all excess of fluid being removed with absorbent cotton.

DR. L. M. COWARDIN considers it a physiological impossibility to save a really diseased pulp, based on the nature of the pulp—an embryonic tissue, and in the construction of the apical foramen. He endeavors, however, to save the life of the pulp in a sixth

year molar, exposed before the root is fully formed, cleansing out the cavity and saturating with creosote.

DR. T. M. ALLEN tries to save a pulp if he accidentally exposes it himself, but if it comes to him having been aching, long exposed, full of debris, he does not consider that he has reason to expect to save it.

DR. W. E. WALKER emphasized the importance of a knowledge of temperaments, as bearing upon pulp-capping. He has much better success in capping pulps for patients of the nervous temperament than with the lymphatic, the reverse being the case when it becomes necessary to devitalize a pulp. In diagnosis, he said: we must consider the patient as a whole, his habits of life, his temperament, his occupation, as to whether sedentary or otherwise, his physical habits, etc. These are all factors to be borne in mind in diagnosing for pulp treatment.

DR. S. C. G. WATKINS after cleansing out the cavity, lays a pledget of cotton saturated with creosote over the exposed pulp. This gives all the antiseptic effect of creosote but does not coagulate the surface of the pulp or leave scar tissue. Removing the cotton a cap of asbestos is gently placed over the pulp exposure and thin cement flowed over it.

DR. A. D. ADAIR does not think it justifiable to destroy a live nerve without first making the attempt to save it by capping. It may die, but the tooth is no worse off then than if he had killed it, and you have at least given it a chance of living.

DR. C. L. BOYD devitalizes all pulps in teeth when the dentine is non-sensitive about the cornua. By observing this rule he is very successful in capping pulps.

DR. R. G. YOUNG finds, that with the best care he can exercise, both in selection of cases, and in method employed, nine out of ten capped pulps die.

DR. J. Y. CRAWFORD spoke of the layer of non-sensitive dentine found over a newly exposed pulp as being the indication of paresis in that portion of the pulp. Thin cement flowed over the dentine will sometimes cause a renewal of vitality, but if there is not a return of sensitiveness within from twelve to twenty-four hours, the tooth is sure to give trouble sooner or later.

DR. W. E. WALKER described two different conditions he had observed in the character of the dentine in this non-sensitive zone. First, very hard and of nearly normal color, densely in-

filtrated with calcic matter, this is not an unfavorable condition. In the other condition the color is abnormal, ranging from the normal to a very dark gray; it cuts easily and the tubuli are filled with decomposing matter, and on cutting through to the pulp, there will often be found what might be called a pocket of pus and gases. In this form hot applications are painful, causing expansion of the gases and pressure in the still vital portion of the pulp. This illustrates the importance of differential diagnosis and the value of Dr. Harlan's subdivision of pulp conditions but the subjection and objection stays as a guide in our treatment whether to devitalize or to attempt to save the pulp by capping.

A Standard of Morality.*

BY DR. H. E. BEACH, CLARKSVILLE, TENN.

EVERY dentist who has been through a dental college, knows that almost every class is afflicted with a class thief or thieves; that it is not safe to have anything worth having lying around where it can be appropriated. If a man will steal instruments and materials from his class-mates, he will steal money or anything else; what may not be expected from him in his dealings with his patients and the public? He may be educated to the highest conceivable standard, but he will be dishonest still. The dental colleges have responded readily and with hearty co-operation, to every demand made upon them by the profession, and if it be required that no student be graduated who is known to so far forget the moral law as to disregard the rights of others, there would be less violation of the Code of ethics after the present "crop" has died out. Let the institutions, if necessary, employ keen, shrewd class detectives, and weed out the good from the bad before they are licensed to practice their evil desires for gain upon a trusting public. Let the colleges give to the profession none that are not trustworthy. Then, and not till then, will a new era begin to dawn.

*Extract from address before the Southern Dental Association, Nov. 1895.

Treatment of the Deciduous Teeth.

DISCUSSION IN SOUTHERN DENTAL ASSOCIATION.

DR. R. G. YOUNG, (Anniston, Ala.,) asked what to do in a case where, with the sixth year molars just through the gum, the parents presented the child demanding the extraction of abscessed baby molars. He said: What can you do with such teeth? You cannot clean the roots and fill them, for they are probably partially absorbed, and you would go right through into soft tissues, or perhaps strike the new tooth. He said: I can manage little children all right but I do not know what to do in such a case.

DR. W. E. WALKER, in reply gave his method for treating and filling the root canals of deciduous teeth, cleansing as thoroughly as possible with due consideration for the little patient, and bearing in mind the temporary character of the work, permitting less perfect preparation, than for permanent work. He employs antiseptic agents as for permanent work, and fills the canals by pumping or churning in phosphate of lime in the magma state, as suggested by Dr. Cravens some years ago, working into the soft mass, the dry phosphate of lime; filling the cavity as usual. If this root-filling goes through it does no harm, and offers no obstacle in the path of the incoming tooth, while if further "absorption" takes place (such as takes place in the roots of some replanted or implanted teeth) there is no stiff point to project beyond the end of the root.

DR. J. Y. CRAWFORD, aims to establish drainage and control conditions. If the opening into the root canals can be made funnel-shaped he puts in a little iodoform or beechwood creosote, made into a sterilizing paste with a suitable powder, or a little chloropercha into the mouth of the canals, the main thing being to get its cavity clean, dry and sterilized. Fill the pulp chamber with gutta-percha, or the best cement. At the same sitting or another, grind off the tooth till occlusion is prevented, and by repeating this operation at intervals, the tooth non-antagonized until the bifurcation of the roots is reached, and but little is left to be shed. By this procedure, premature extraction of the tooth is prevented, and the permanent tooth prevented from erupting be-

fore the proper time. Absorption is supplemented by exfoliation.

In connection with Dr. Cryer's stereopticon exhibit of microscopic slides of sections of bone, Dr. Crawford spoke of the condition of the bone after premature extraction of the tooth as affecting the eruption of the succeeding permanent tooth. If the surrounding parts have been healthy, the perfect, rapid healing may cause the permanent tooth to be permanently encysted. On the other hand, if the parts especially the bone, have been diseased, as from an abscessed deciduous tooth, where this is prematurely extracted the permanent tooth may drop down too early in an immature condition.

Diagnosis of Lesions of the Heart Previous to Administering Anesthetics.*

BY W. H. WHITSLAR, M.D., D.D.S., CLEVELAND, OHIO.

It is a serious problem when anesthetics are given, to whom and under what conditions they may be administered. This is of such importance that every practitioner should consider well the advisability of assuming the responsibility of the care of an individual in an unconscious state. The topic before us therefore, opens up to mind these questions:

- (a) Do lesions of the heart interfere with anesthesia?
- (b) Is diagnosis of the lesions an easy matter?
- (c) How may diagnosis be made?
- (d) What are the responsibilities?

Let us consider these questions. Every human body has three circulating fluids, *i. e.*, blood, lymph and chyle. The blood in man is proportioned to the weight of the body, as 1 to 13, and this ratio is indicative of physical value aside from that of the vital. Of course we realize its worth in vital organization because it is the provider of foods to the various tissues. It is also the scavenger that takes away impurities. It at one time or another contains everything about to become part of the tissues and everything which has ceased to belong to them. Morphologically, blood consists of plasma and corpuscles, red and white, also blood platelets. Normally there exists in one cubic millimeter of plasma five millions of red corpuscles and three hundred

thousand blood platelets. There is one white blood corpuscle (leucocyte) for every five hundred red corpuscles. Blood being a circulating fluid, it is attended by three factors, *i. e.*, its propelling force, fluidity, and size of vessels. All these, the heart, the plasma, thickened or thinned by numbers of corpuscles, and the lumen and area of vessel walls, modify the velocity of the blood current. Disturbances in either of these factors produce changes in the circulation of the blood. Now, if the circulation of the blood be disturbed by anything for an undue length of time, disease is the result. We may, however, cause a transgression from the natural course for a short time by emotion, change of position of the body, (gravitation), over-indulgence in food, and not seriously affect the blood currents, but these would, if too pronounced, manifest unusual disturbances in the action of the heart, therefore, from so simple an illustration it is easy to conceive changes wrought in the blood by the introduction of a vapor that poisons its composition sufficiently to produce that state known as anesthesia. These changes are rendered less agreeable to the vital economy in proportion to the diseased conditions. Hence, lesions affect anesthesia proportionately to their diseased condition and less proportionately to their compensated states found with lesions of the heart, simply because of the vitality of the organs being insufficient to resist greater ingress of unnatural bodies. The blood itself has most to do with anesthesia, but this cannot move continuously without a propelling force, and if that be weakened you perceive the result.

The greatest modifications of the circulating apparatus are to be found in the heart, which forces blood to every nook and cranny of the body. The problem of knowledge of the diseases that affect the heart's action is partly physical, partly vital. Diseases of the circulatory apparatus are associated to a great extent with certain mechanical disturbances called lesions. This is owing to the fact that these organs subserve mechanical disturbances called lesions, and the regular rhythm is maintained by the pump arrangement and its distributory canals. To understand this class of diseases one must resort to physical methods of examination. Three of the great senses are used in this examination which includes an *Inspection* of the size and form of body externally; *Palpitation*, feeling the movements of walls of the thorax as well as heart; *Percussion*, which relates the condition

of density by sounds; and *Auscultation*, also relating sounds more specific in character. The pulse plays a significant part as I will illustrate later on.

In order to comprehend the various lesions which produce sounds or other defects one must be familiar with the normal heart's action. Normally there are six sounds of the heart, as follows: two vibrations of the auricular-ventricular valves, two vibrations of semi-lunar valves, and two vibrations of walls of large vessels. Generally speaking these are resolved into two sounds, the systolic or first sound, by the contraction of the ventricles felt at the apex of the heart, and the diastolic or second sound, heard at the base of the heart by the sigmoid valves of the aorta and pulmonary artery.

All these sounds are functional; if altered they become organic, and then it is that we perceive disease. Alterations may arise from fevers, fatty degenerations or hypertrophies. Want of synchronous action of the valves of the two sides split one or the other into component elements so that either sound may be reduplicated. Any condition which increases the lesion either in the systemic or pulmonary circulation may disturb the balance of the sides so as to dispose to a reduplication of the sounds.

Cardiac sounds may be replaced by murmurs in the heart or outside of it. These have a blowing, rasping, sighing and other characteristics. To determine these and their significance, two important facts must be studied, namely their rhythm and their area of distribution.

The diseases of the heart and its valves which produce mechanical disorders of the circulation by establishing abnormal relations are of two kinds, obstructive and regurgitant.

Valvular disease narrowing the size of the orifice presents an obstacle to the passage of the blood currents, a condition better known as *stenosis*. On the other hand when the blood flows back through an orifice of imperfect closure of the valves, due either to widening of the orifice or valvular changes, the condition is called *regurgitation* or *insufficiency*. Each of the orifices may be affected with one or both forms of the disease, but the frequency with which the several orifices are attacked varies. Generally the left side of the heart is affected by organic disease. The right is disturbed by lung diseases which cause increased tension leading to dilatation. All valvular diseases tend to lessen

the arterial blood and there is an overfulness and a statis of the veins. From this there follows visceral disorders. This often diverted by compensation to form a normal balance. In this we find that hypertrophy assists by increasing the contractile power behind the defective valve. This produces greater tension in the vessels. Any failure of compensation is due to loss of nutrition, then occurs palpitation from slight exertion or excitement. From thirty to forty per cent. of all cases unassociated with other lesions are of mitral insufficiency. (Pepper). Under chloroform, heart failure as a rule is due to fatty degeneration or mitral or aortic valvular lesions.

Now to diagnose these various lesions, endocarditis, myocarditis may be present and affect the tissues so as to produce alterations of sounds or conditions. Then too, temporary affections of the heart may be produced by diseases of the liver. Murchison states that it is not rare to observe enfeebled circulation in hepatic disorder. It is believed by Faber and others that biliary acids have direct action upon the cardiac muscle. Independently of palpitations, syncope and painful affections, nervous disorders, cephalalgia, insomnia, hallucinations, and so on are secondary to hypertrophy as a sign of disease.

A common sign is palpitation. This is sometimes symptomatic of dyspepsia, therefore is not pathognomonic. It is on this account that many persons think they have heart disease when it is only a reflex irritation from the digestive organs. It is often supposed by the ordinary observer, that intermittency of the pulse is an indication of heart lesions. This is common in men of advanced age. It is a nervous trick and bears no significance if it is a pure halt of the heart. Intermittency with irregularity may be found in fatty degeneration of the heart or during fevers. In valvular disease the value of the pulse is best known by the use of the sphygmograph, but this is generally impracticable because it does not assist as much as the physical diagnosis directly over the heart by the methods already mentioned. Now I mention these facts to show that diagnosis of lesions of the heart is not an easy matter, and that a knowledge of not only the heart but lungs and visceral organs is required to comprehend fully cardiac diseases. By the fact of difficulty of diagnosis of these affections it is more apparent that responsibility is serious. The use of an anesthetic is attended with appreciable risk and the life

of the patient is engendered. Occasionally there is a death. Dr. William Pepper states that "On the whole sudden death is rare from valvular disease." This favors, if true, the ignorant man who uses an anesthetic and there is no doubt it saves many lives that are jeopardized by ignorance. The law, however, does not recognize ignorance even if the ignorant be careful. He must have a knowledge, then skill.

(The paper was illustrated by sphygmographic tracings.)

Consolidation of the American and the Southern Dental Associations.*

(Reported by Mrs. J. M. Walker.)

As is generally known, the American Dental Association at its meeting, at Old Point Comfort, in 1894, appointed a committee to confer with a similar committee from the Southern Dental Association to take into consideration the feasibility as well as desirability of consolidating the two societies. At the meeting of the "American" at Asbury Park, in August, 1895, the same committee was continued, no meeting of the "Southern" having been held.

At the meeting of the latter Association in Atlanta, Nov. 1895, the President, Dr. H. E. Beach, in his annual address suggested the appointment of the committee, as above, as not only the proper courtesy due to the American Association, but more especially because of the edict that has gone forth as the expressed determination of the President of that body that—"Even if the Southern Association does not come in, we will make the American Dental Association thoroughly and genuinely—not only in name, but practically, the society that shall pass upon all questions of ethics and other questions that should be adjudicated by the whole profession. Admitting, as a condition greatly to be desired, that there should be an organized body of American dentists "qualified by learning and experience, and having the authority to act officially" in such matters, Dr. Beach would not agree that either the "American" or the "Southern" or any other Association of dentists *as now organized* should assume to

*Report from Southern Dental Association, Atlanta, Nov. 1895.

itself the prerogative to legislate, or prescribe rules, to govern the profession at large. This would be unwise if not repulsive to the feelings of free American citizens. What seems to be needed, as outlined by Dr. Beach is a National Association which should be to the dental profession, what the United States Senate is to the American citizen, the membership to be wholly representative and elected by State Societies in proportion to the number of registered dentists in each state. Such a body should meet annually at some central point, convenient of access, and be clothed with authority to formulate rules, ethical, legislative and judicial, on all questions concerning the dental profession. The members should be elected for one year, and be eligible for re-election as long as their actions are approved by their constituency. Such a body of men, coming fresh from every section of this great country, would be better qualified to represent the wants and necessities of the whole profession, than any organization composed of a membership whose term of qualification lasts as long as he pays his dues.

In accordance with the suggestion of the President, a committee of Conference was appointed consisting of:

Drs. L. A. Noel, Nashville, Tenn., Chairman; Francis Peabody, Louisville, Ky.; I. T. Calvert, Spartanburg, S. C.; Rollo Knapp, New Orleans, La.; E. P. Beadles, Danville, Va.

The Committee from the American Dental Association being composed of:

Drs. Thos. Fillebrowne, Boston, Mass.; B. Holly Smith, Baltimore, Md.; Louis Jack, Philadelphia, Pa.; J. Y. Crawford, Nashville, Tenn.; J. N. Crouse, Chicago, Ill. Some of the members of both committees being members of both Associations.

A joint conference was held, with a partial representation of both committees.

The committee reported to the Association a desire for further conference, realizing the importance of the work placed in their hands and desiring to represent exactly the concensus of opinion in whatever final action may be taken, and deeming it wise to canvass the matter thoroughly and consider the consequences from every point of view.

Tumors of the Mouth.

BY C. G. DARLING, M.D.,

TUMORS small and benign give neither the patient nor the dentist much concern. They are early submitted to him for treatment and he usually brings them to a successful termination, but the malignant varieties, coming insiduously, never give a hint of their true character until they are decidedly present, already appropriating space and tissue to their own use and like the squatter, determined to hold the ground at any cost, they soon become a source of danger and discomfort to the patient, exciting the anxiety of the dentist, and wise is he who at an early date seeks refuge in consultation in all cases where the malignancy of a growth may be questioned.

It is not the object of this paper to treat of the origin and pathology of those tumors which may appear in the mouth but rather to examine them from a surgical standpoint and discuss methods of surgical treatment.

Fortunately the risk to life in operations about the face and mouth is slight when compared with operations of the same magnitude in other parts of the body. No life-sustaining organs are involved. Shock is not great and sepsis is so slight in wounds of this locality that it seldom proves fatal. Therefore, nearly all operations about the face are a success so far as recovering from the effects of the operation and repair in tissues may be concerned. Even those failures made so by a return of the disease are not without good results, and I will attempt to show by the records of a few cases, that even the unpromising and rapidly developing tumors may be removed, prolonging the life of the patient and giving comfort in his last days.

The first case was treated by Prof. Nancrede in the University Clinic and has been reported by him in the *Annals of Surgery*.

E. L.—, a man thirty years of age, entered the University Hospital in March, '91, and gave the following history. In July, '90, he had noticed a small growth on the inferior border of the lower jaw which corresponded to the position of the first molar tooth. Early in October two teeth were extracted, (whether by

physician or dentist I know not) under the impression that at the roots of these would be found the cause of the trouble and that it could be easily removed, but, instead of improvement, there sprung up from the alveolar process a mass which rapidly increased in size, until nearly all the right half of the lower jaw was involved. The growth soon began to break down, while the discharges and sloughs from this suppurating mass were not entirely expelled but portions were swallowed and taken into the lungs causing a rapid decline in the patient's health. The diagnosis of rapidly growing sarcoma was made and on March 30, 1892, the first operation was made, removing a little more than half of the lower jaw. The parts healed promptly and in three weeks the patient left the hospital apparently cured.

Three weeks later however, he returned with the disease well advanced in the remaining portion of the jaw. This was promptly removed together with the floor of the mouth well down to the base of the tongue. June 10, '92, he again returned to his home and no change was noticed for two months, when nodules began to develop on the right side near the old scar. These continued to increase in size and join together until quite a bulky tumor was formed. For the third time he came to the hospital, again it was decided that an operation might give relief, although the tumor extended well up toward the temporal region involving nearly all branches of the facial nerve and reaching downward along the carotid vessels. After a tedious and dangerous dissection which lasted more than two hours the growth was successfully removed.

Again the patient made a good recovery and died about two years later from the effects of sarcoma in the lungs and kidneys. During this time he was remarkably free from pain and seemed to enjoy life. No great deformity was caused by this extensive operation and he could speak nearly as distinctly as before, though the entire lower jaw and the floor of the mouth were removed.

The next case (also in Prof. Nancrede's Clinic) while less formidable than the preceding one, was made so by the character and extent of the growth, the patient having submitted to the operation while the disease was probably confined to a portion of the lower maxillary bone.

Mr. C. E—, 37 years old has always enjoyed excellent health. Twelve years ago, the appearance of the right lower

wisdom tooth gave him much trouble and it became necessary to extract it.

During the operation a portion of the root was broken off and allowed to remain. From this time the parts were sensitive and easily irritated and a few weeks later a small tumor developed which was probably cystic or soon became so, for, he says, it was opened many times by physicians and dentists always discharging a thin water-like fluid but never discharging any pus.

Six years ago it began to increase in size but made slow progress, until about two months ago, when a change came on rapidly and at the same time he entered the University Hospital, March 14, '95, the growth had extended forward on the lower jaw nearly to the median line, backward to the angle and well up the ramus, pushing the tissues of the cheek prominently outward. There was an opening in the central portion of the tumor from which flowed a thin offensive fluid; the patient stated that some small pieces of bone had been discharged from the opening, but no trace had been discovered of the offending root. All the molar teeth on that side have recently been extracted and their place is now occupied by the growth.

A probe entered in the opening revealed the fact that some fragments of bone still remain, which would undoubtedly come away soon if the tumor is allowed to pursue its course unmolested.

Excepting these, a large portion of the bone seems to be destroyed or displaced by the growth.

Excision of the right half of the lower jaw together with the outlying parts of the growth offered the best chance for a cure, and the patient promptly selected this course.

The operation did not present any unusual points of difficulty except that the bone was easily broken at the point of disease making it much more difficult to remove the ramus.

Recovery has promptly taken place and at this time he is well. In this case is found, what was at first a very simple tumor, a dentigerous cyst or epulic growth, after many years of irritation changing to a sarcoma. The dread which the physician, dentist or patient may have of operation or their faith in medical measures probably were responsible for the delay which had allowed this change to take place. This is an earnest appeal for early and complete removal of all tumors of the mouth except in those cases where the growth is not irritated, remains station-

ary, and can be frequently seen by the surgeon or dentist in charge, and operation advised, when the slightest change for the slightest change for the worse takes place.

Sarcomatous tumors of the jaw may be removed with a reasonable hope of cure when the growth is central, (myeloid sarcoma) if the entire bone to which the disease is confined be removed. Periosteal sarcoma does not promise such good results, because the surrounding tissue may be involved, but these tumors come early in life when the patient is vigorous and will rapidly recover from operations. In all tumors of this class, not only the jaw should be removed to the median line, but the entire periosteum and attachment of muscles must also be taken away, if we operate with the expectation of a cure.

Here is a case illustrating the proper method of operating for carcinoma when the surgeon sees his case early.

Mr. W. H.—, farmer, has been a moderate drinker, enjoying good health. Three weeks ago he first noticed a small growth on the upper surface of the right side of his tongue, it was closely connected with the surrounding tissue, growing rapidly and painlessly. A small portion was excised under cocain anesthesia and submitted to microscopical examination. October 17, '94, he was operated upon in Prof. Nancrede's clinic, one-half the tongue being removed well back to the base. Rather a heroic operation for a small growth of three weeks duration you may say, but here is the pathologist's report: "I have made sections of the growth from the tongue already reported as epithelioma and as far as I can see you have gone well outside of the disease." This extensive operation was the only hope of cure in this man, even then the lymphatic glands may have been involved, and the return of the disease may be noted at that point while the scar surface remains healthy. Cancer appearing in the mouth can scarcely be mistaken for any other growth, and there is never any difficulty in removing a portion to confirm the diagnosis, then prompt and thorough removal is the only chance for cure. When any lymphatics are found to be suspiciously enlarged, they must also be removed at the same time.

Mechanical devices to take the place of parts removed or to correct deformities following operations for malignant disease should not be applied for some time after complete recovery because of the danger that such irritation might renew the disease.

When the cicatrices are well-formed or the diseased condition is not malignant nor beyond the bone, this point may be disregarded and the deformity corrected. The use of medicine in the treatment of malignant tumors is not to be considered where operation is possible but may be tried as a last resort. Coley of New York, has recently reported thirty-five cases treated by injecting the combined toxins of erysipelas and the bacillus prodigiosus. In five of these cases he has reasonable hope of a permanent cure. All of his cases were inoperable and the diagnosis was verified microscopically. The investigations being carried on at the present time concerning the causes and treatment of these tumors certainly promises great results.

Clinics.

THE following clinics were given at the Ohio State Dental Society meeting:

Anesthetic Pencil. Dr. Frank Creager gave a demonstration of the use of the anesthetic pencil that he has invented. It was used to obtund the tissues during the implantation of a tubed tooth, and the patient said there was no pain whatever from the operation. It has been used with marked success in the extraction of teeth, setting crowns, treatment of diseased tooth pulps, fastening ligatures about the teeth, etc. It consists of a neat, hard rubber holder and medicated cylinders that fit into the holder and are securely held in place. The medicated points contain a small quantity of cocain and trinitrin together with menthol and harmless antiseptics. The medicine is applied externally by rubbing the point on the tissues. These points dissolve at the temperature of the mouth, and can be used, he claims, without fear of the serious results which so frequently follow the injection of fluids by a hypodermic syringe.

Removeable Bridge. Dr. A. S. Condit gave a demonstration of the construction of his combination bridge and plate work. The appliance is ahead of anything that has yet been invented and is worthy the careful investigation of every dentist.

Electrical Appliance. Dr. L. E. Custer presented an improved electrical gold annealer, which is a most admirable appli-

ance for all who have the advantage of the electric current. He also demonstrated the workings of a water rheostat for regulating the electric current. This apparatus (see January issue Ohio Dental Journal for full description) has special merits. It is effective, simple, and cheap. Any dentist can construct one. While it is not a new device, Dr. Custer deserves great credit for bringing it to the attention of the dental profession and making it applicable to the use of dental appliances.

Implanting Tubed Tooth. Dr. J. B. Snyder gave a clinic on the implantation of a tubed tooth. A metal tube is first implanted in the bone and a pivot crown secured in the tube. (See January Ohio Journal).

Articulation of Gold Crowns. Dr. T. H. Whiteside demonstrated his method of articulation, which we hope to present in a subsequent issue.

The Care of Children's Teeth.*

BY DR. W. H. WRIGHT, BRANDON, VT.

WE have all been surprised at the neglect of intelligent parents about the temporary teeth of their children. It is only when this neglect has ended in suffering that the advice and help of the dentist is sought. I once had a little girl from a good family, who had a fistulous opening under the inferior six year molar, when, if the parent had been sufficiently intelligent on the subject, the child would have been spared an unsightly scar, and the loss of a valuable tooth from the dental arch. Few are aware of the importance of care for the temporary teeth. If insisted upon, we are met with the question, "Of what use is it to fill these teeth when they will soon be replaced by a permanent set?" It is not understood that they have a great value in keeping the arch in its proper shape for the reception of the permanent set. Nature intended that they should remain until the time comes for their successors. And in addition to their early loss the suffering that their neglect entails is no small matter. Again, the mouth is the gateway through which the needed supply of food enters the body, and in which it undergoes its first preparation

* Abstract of a paper read at Vermont State Dental Society, 1895.

for digestion, and this is as important to the child as to the adult. The presence of disease with resultant filth and dangerous pus in the very beginning of the process of nutrition is a great evil, which may affect the general health. We insist upon the necessity of clean and wholesome food. We are careful about the utensils in which it is prepared, but singularly indifferent to the cleanliness of its first receptacle, and do not exercise the proper care that it may reach the stomach free from unnatural defilement. Much suffering might be avoided, and also permanent injury to the digestive apparatus, if children were taught not only to wash their faces and hands, but to purify and cleanse the teeth, at least twice a day. It is a clear duty resting upon us to disseminate information upon this point, and thus to contribute to the prevention of a large amount of needless suffering, as well as injury to the masticatory apparatus.

The subject of the best food for the building up of the dental process is one also that needs presentation. We all know how universal is the demand for the flour which will make the whitest bread, when that whiteness is only secured by the elimination of the nitrates and phosphates so essential to the body, leaving only the carbonates, which abound in other foods. Our grandparents were more fortunate, whom necessity compelled to be content with coarser flour, and to use their teeth in efforts to overcome its hardness. It may save time and labor to bolt this modern soft bread unchewed into the stomach before it is properly prepared and mixed with the saliva, but we pay for it dearly in poor teeth and in indigestion. I am a believer in the use of oatmeal and other cereals, which have not suffered from this artificial removal of some of their most valuable constituents.

In regard to ways and means for disseminating knowledge of the teeth, it is perhaps sufficient to say that much must be left to the good judgment and professional spirit of those who are in active practice. We can at least recognize the duty incumbent upon us, and seize every opportunity to increase information on the subject. Certainly we ought to feel in honor bound to enlighten those who seek our aid and trust our wisdom and skill. There is no better way to disseminate knowledge than for those who know to tell those who do not.

The twenty-five thousand dentists in the United States are surely able to exert an influence here which would reflect credit

upon the profession, while at the same time enlarging their business and profits. The more intelligent people are, and the more impressed with the importance to health of attention to their teeth, the more will they seek the assistance of those qualified to render them aid. Our best patrons, and those for whom we can do the best work, with the best results, are those who are intelligent, and therefore disposed to give care to their teeth; while the ignorant remain away altogether, or only seek our aid in desperate and hopeless cases. It is also a question how far we owe it to ourselves and the public to utilize more that greatest of organs for the disseminating of intelligence and the influencing of public opinion, the Press. The newspaper goes where books and pamphlets seldom come. Those read newspapers who read nothing else. The use of the Press for disseminating information that is preventive in its nature and purpose is not open to the objections of advertising a business which no one who has the credit of the profession at heart can advocate or practise. It is redeemed from all appearance of selfishness by the dignity of its motive, the relief of our fellowmen from needless suffering. Such will especially be the case if those eminent in the profession and enjoying the reputation of being experts undertake the work of enlightening the public. Their names will carry weight and give validity to their advice. They may be trusted to carry out that article of our code which says in substance: "It is our duty to enlighten the public mind so that it will properly appreciate the beneficent efforts of our profession." What I would insist upon, however, is not this or that method of reaching so desirable a result, but that we should cherish this purpose as a part of our professional duty, and be ready to lend our influence to all plans for the remedying of the evils which certainly exist. It is not so much the well-to-do and intelligent who need our assistance in this matter, as it is those whose poverty renders them unwilling to incur expense which seems to them unnecessary. The public may well afford to provide this large class with the means of ascertaining this need by the aid of the State, and through the schools, as a part of the debt the State owes to herself and her children.

An Interesting Case.*

BY M. H. FLETCHER, M.D., D.D.S., CINCINNATI.

TEN days ago I took from the lower left jaw—that is, from the lower portion of the left side of the lower jaw—a small tumor, which has the characteristics, as far as I am able to tell, of a malignant growth. It seems to me these tumors have an exciting cause, and these causes may in their origin be connected with the pathology of the teeth. They may arise from the extraction of teeth. This case that I speak of that I treated ten days ago was sent to me after a week's suffering from an extracted lower molar. There was intense inflammation of the lower jaw on the left side. The bone about the sockets of the teeth was highly inflamed, and the soft tissues were exceedingly tender. I took this, at first, to be a matter of poisoning from bad forceps, unclean forceps. Whether such was the case or not I do not know. Since that an additional tumor has shown itself just posterior to that one; and ten days after taking this tumor off I found it one-half the size it was before. That is about ten days ago—pretty nearly time for it to return again. If I still find that growing, that is if it has started again, I shall feel considerably exercised over this man's future. He is a strong, healthy man, thirty-five years of age, and has every condition about him to indicate that he has a malignant tumor, so far as I could see. This particular specimen is of special interest, from the fact that a molar tooth, superior wisdom tooth, has been carried clear out of its place, the crown of it directed toward the nose, but about the junction of the vertical plate of the palate bone where it joins on the superior maxillary. Here I consider the exciting cause. I found between the teeth where this had been—an incision was made after the amputation—and I found a membrane going in from the mouth, showing that irritation of some character probably started at that place. My theory is, that from dental lesion there was sufficient irritation of the periosteum on the floor of the antrum to start a growth in that particular position. As the history, which I read, shows, this tumor started at about five years of age. At that

*Remarks at the Miss. Valley Society, 1895.

time the dental follicle holding the wisdom tooth was far enough back, and far enough up in the antrum at that point, which I expect to explain in one paragraph, to undermine that follicle, taking with it the bone that surrounded it, that is, making a complete circuit almost, coming around until the crown of the tooth points toward the nose; and it can be accounted for in my mind only in that way; this tumor, starting at the edge, simply carried with it the dental follicle and its surrounding tissues, and pushed it about the antrum until it was finally landed where you will see it on examination. This case is very interesting to us, because of this particular feature of exciting causes which may arise from teeth. These exciting causes may be old roots of teeth, salivary calculus, alveolar abscess, in fact anything that continually irritates the tissues in these localities; so that it behooves us as a profession to look after these things, and be ready when there is a semblance of cause of that kind of trouble to remove it. The rough edges of worn teeth, broken teeth, everything of that character that can irritate the mucous membrane, may cause a malignant tumor.

ALL SORTS.

Treatment of Badly Broken Down Anterior Teeth.

In an article read before the New England and Conn-Valley Dental Societies, and published in the *Dental Digest*, Dr. D. Murless says:

"If we consider an incisor with a third, a half, or even more, decayed and broken down from the apical and cutting edge, taking away a large corner of the tooth, and in many cases containing a live pulp, and when we reflect on the troublesome consequences of death of the pulp, or even pulp irritation, which is very likely to follow filling, we see that it is imperatively demanded that the effort at pulp-conservation be made. Such a tooth as I have described can be filled and restored to its original size and shape, by first filling with some plastic, and then putting on a gold cap or crown, with an opening in its face of such shape and size as will just cover the margin of the cavity, having but very little more gold in view than would be seen if the tooth had simply been filled.

"There are many advantages in this method, as teeth can be saved that it would be nearly impossible to preserve by other treatments; for example, many times we find the molars of the lower set lost, and persons

in such a condition in using their teeth bring the lower incisor against the lingual side of the uppers. Where they have been thus used for some time the lower teeth will be worn on the cutting edge and shortened, and the lingual surface of the uppers will be worn by abrasion, so much so that the under side of the uppers will often be worn away, forming a shoulder at the neck of the tooth, and occasionally the labial surface will be worn thin. In such cases there is no way to retain a filling, but the tooth can be backed up with cement, and a cap, such as I have described, be telescoped over it. By this means the cutting edge is thoroughly protected, the whole tooth bound and held firmly together, and we may say it is as strong and serviceable as ever and needs no more care than if it were perfectly sound."

Double Central Incisors.

A unique case is presented by Dr. A. H. Peck, in the *Dental Digest*, as follows:—

"A boy, about twelve years old, presented with both his upper central incisors double. A large cavity had formed in the middle of the left central, extending through from the labial to the lingual surface. Each of these halves of the tooth possessed a separate and distinct root. The plates of enamel of the two parts were united near the incisal edges, also at the cervix, the union being perfect. The two parts had evidently been united throughout the entire length of the crown, the union being more or less imperfect, no doubt, previous to the formation of the carious cavity. In the mesial half of this double tooth the pulp was dead; in the distal half it was alive. The cavity had developed to such an extent that it was impossible to tell whether the coronal portions of the pulp-chambers had been united at first, or whether they had always been separated from each other. However, there is no doubt in my mind but that the latter condition had existed.

The two parts of the right central were united only at the cervical portion. A cavity had also developed in the centre of this tooth, but not to so great an extent as in the other. The pulps were not exposed in either part, and the coronal portions had positively never been united. From a careful test with heat the pulps were found to be alive in each part. The roots of this tooth, as nearly as could be determined from the examination it was possible to make, were united for a considerable distance towards the apices. This case is very interesting since, so far as I know, it is the only one of its kind on record. Excepting for these two double teeth, the others were normal in shape and number."

Treatment of Root Canals.

In discussing this subject at the Odontographic Society, Chicago, the proceedings of which appear in the *Dental Review*, Dr. A. W. Harlan said :

"I will speak of one or two of the points in the paper that the essayist asks some light upon, and one is with reference to the oil of cassia staining the teeth. Now, I don't use the oil of cassia in any of the anterior teeth myself and I have not for a number of years, for the reason that it does stain. That is, it stains because the oil of cassia is left too long in the teeth. It stains because other drugs are used in which the oil of cassia is soluble, and the oil of cassia is irritating. Some of you may be familiar with the fact that I abandoned the oil of cassia in the treatment of any exposed teeth a number of years ago in favor of myrtol, which is a drug that will not stain the teeth, and I think it is equally efficient and less irritating.

"The question of the staining of the teeth through the use of agents like the oil of cassia and the yellow oil of cinnamon has been studied by me to a certain extent, and I have found that you can remove the stains of oil of cassia with the ozonized oil of turpentine. I expect that in some cases you can remove it with pyrozone, but in some cases I have failed. But the pure ozonized oil of turpentine you can use for the removal of these stains. It will not do it at once, it will not do it with one treatment or two, but after repeated treatments you can get rid of that stain. Now, if you have a turpentine water made from pure turpentine, which is $C_{10}H_{16}$, you will have all of the resinous properties of turpentine taken away and you will not subsequently have the stains produced by the resins that are generally found in commercial oil of turpentine. So you must either have it freshly ozonized, or make a turpentine water from the pure turpentine to get rid of these stains.

"I want to call your attention, gentlemen, to a method of washing out putrescent canals that may be a little new, although it involves the use of an old plan, and that is, after you have cleansed the root canal of the contents as far as you can, instead of using immediately an oily or a coagulating dressing of any kind, if you dilute the stronger liquid ammonia until it is about one-half of one per cent and thoroughly wash the root canals with that and then dry the roots, you will find that the root is in one of the best conditions for the reception of a subsequent dressing, whether it is a noncoagulant or coagulant. This, I think, is probably better than the silico-fluoride of sodium, which is a very penetrating alkaline fluid. With a one-half per cent solution it is not irritating and it is a very powerful cleanser. I would like to have some of you try that and

see the result. You will find also just prior to the introduction of a root filling of gutta-percha, for instance, that if you wash the root canals with the ammonia water solution, dry the roots and then introduce the oil, if it is cassia, or eucalyptus, or myrtol, you will find that the root filling elings better to the sides of the canal than when washed with almost anything else that I know of."

Sterilized Olive Oil as a Local Anesthetic.

Monsieur Loup contributes an article to *L'Odontologie* in which he says:—

"Refrigerants are not always applicable owing to the region to be operated on, and the frigorific effects on the adjacent teeth, and even without this disagreeable action upon the teeth adjoining, we have met with patients who were unable to bear this cold sensation, followed by scalding.

The fear, although without much foundation, of mortification of the tissues is at all events possible; it is necessary to avoid the sudden return of heat by rinsing the mouth with cold water. Finally, one must not employ coryl, or any other similar agent, when the thermo-cautery is to be used.

We do not pretend to dethrone cocain, which without contradiction is the most powerful and surest local anesthetic from the point of view of its analgesic action, but we wish simply to demonstrate that we can obtain an absolutely complete anesthesia, and one without danger, without any contra-indication whatever, with sterilized oil, reserving cocain for difficult cases, where we may consider an insensibility of longer duration is necessary.

We have no need for the abolition of the sensibility of a region to poison its nervous extremities; it is sufficient for our purpose to deprive them momentarily of their sensitive faculties.

Starting with this theory, if we inject sterilized oil, we drive out all the blood contained in the region to be operated upon, and if we have taken the precaution to make the injection into the body of the derma, into this dense tissue which resists the diffusion, we shall obtain a sheet of oil, which equally bars the return of the sanguineous wave, which bathed and nourished these tissues.

Thus an anæmia is produced, determining an insensibility of all the nervous threads, and the operation is performed without pain. On the whole we obtain the same phenomenon as with compression and cold; we momentarily withdraw nutrition. Thus, without nutrition no movement, no sensibility, no life.

As to the injection we proceed as follows:—We puncture the gum at the level of the collar at the depth even of the cushion surrounding the tooth, and we push our needle in an oblique direction, sighting for the middle of the root and the dermal tissue. The quantity varies according to the subject.

If the tissue is very close half a syringe full suffices; in a contrary case we inject the whole contents of the syringe.

The number of the punctures also varies, and the operator must be the judge as to the number, just as with cocain; two generally suffice.

We obtain the oil by boiling it for five minutes and keep it in well-corked glass tubes.

The experience we have of this new agent is not great, and we do not yet possess many observations, but allowing the absolute innocuousness of olive oil injected into the tissues, we thought it would be well to publish our mode, so that experiments might be made.

The cicatrization is accomplished as rapidly as if nothing had been injected.

Here are a few of the experiments which we have made up to the present:—

An upper left canine root. Injection of a half syringe full, Pravaz's; dense tissue. Extraction painless. The root was a rather difficult one, and we had to go up high to remove it.

Root of the second lower bicuspid, tissue relaxed. Injection: whole syringe full of sterilized oil. Extraction with elevator; no pain.

Roots of the first upper molar, right side, dense tissue; four punctures were made. Injection: Pravaz's syringe, half full of sterilized oil; a little pain at the third root.

Roots of the first upper right molar, tissue very dense. Three parts of the syringe contents of sterilized oil injected. Extraction without pain.

First upper right molar. Injection of the whole contents of the syringe. Difficult extraction, lasting six to seven minutes; no pain.

We make the extraction almost immediately after the injection; this latter should give a large white path to the surface of the tissue, for this coloration is the basis according to which we inject more or less of the liquid."

Epilepsy from Dental Irritation.

In an article in the *Western Dental Journal*, Dr. J. D. Patterson cites a case of epilepsy from dental irritation, as follows:

"The case was a girl, aged 8 years, who for a year before frequent-

ly suffered with spasms or convulsions, which would come on without warning. At school, at home, or at play, she would be seized with these fits, accompanied with violent muscular contractions in various parts of the body. At one time these contractions would force the fingers of the hand into unnatural and rigid positions, at times only one finger doubling up, and again all of the fingers clasped tightly, the nails leaving their imprint upon the palm. Similar contractions would appear on the toes of the feet. In one spasm, which I witnessed myself, the hand at the wrist-joint was bent at a right angle with the arm and could not be straightened until the spasm passed. The usual methods of treatment, by two physicians, long instituted, had failed to give permanent relief, and by their advice she came for treatment for dental irritation. There were no decayed teeth. The eruption of the permanent teeth were in various stages and considerably delayed. Noting the points where irritation appeared from coming teeth and delayed shedding of deciduous teeth, I lanced the gums and removed deciduous teeth where there was suspicion of irritation, with the result that the epileptic seizures ceased. This was repeated whenever these attacks came on, and it is sufficient to say that relief was always complete. Not until all the permanent teeth were completely erupted did the attacks entirely cease. The patient, at first a strong, healthy girl, became anemic while the earlier treatment was of no avail, but rapidly improved when the relief from dental irritation was instituted, became strong, and is now the mother of a family. The epileptic spasms had not returned up to three years ago, when I last could hear from her."

Some Points in Porcelain Work

In an article in the *Dental Practitioner and Advertiser*, Dr. A. C. McAlpin, Warren, Pa., among other things speaks of crown work as follows:—

"The crown is made as follows: Reduce the natural crown to a size which will admit of a twenty-eight American gauge platinum plate over the entire palatine and approximal surfaces, and a twenty-two gauge porcelain facing. Obliterate the cervical ridge, then fit the cervical circumference of the stub with a thirty gauge platinum cylindrical tube (in making which, lap the metal ends a little), solder this with pure gold, using as little as possible, place the tube on the stub, mark it on a line with the palatine surfaces of the approximating teeth and gums, and grind the tube inside the lines with a dry stone, to such thinness that it can be burnished to the stub without affecting the cervical adaptation. Then solder to this surface, with pure gold (using as little as possible), a twen-

ty-eight American gauge platinum plate, *this* to form the entire palatine and about half the approximal surfaces of the crown. Then mark and grind the labial surface of the tube and adapt to the stub by pressure, without burnishing. Use for this an old amalgam serrated plugger, that the ground surface may remain rough for the adhesion of the porcelain, then grind the back of the veneer facing so that when placed on the shell, it will be in the position required when finished. All platinum surfaces to which porcelain body is to adhere, should be roughened with a dry stone. Remove the shell from the stub, heat it to white heat, to cleanse and prevent carbonation, which might discolor the facing, and place the facing on the shell in correct position, with the porcelain body between, and dry well before baking. Bake to a slight gloss only on the porcelain body, cool slowly and finish the same as in Richmond crown work.

In attaching a bridge tooth to a jacket crown, allow the heavy palatine backing to extend across the space to be filled, roughen its labial surface with a dry stone, curl the edges slightly to stiffen them, and proceed with a facing as in the jacket crown.

For longer bridges, the jacket minus the porcelain can be made, but with pins attached to the labial surface, the bridge teeth soldered to them as in ordinary bridge work. The facings can be put on the shells by the method explained, in the attaching of a cup facing. For replacing a lost facing from a bridge, which is broken, burnish a thirty-two gauge platinum plate to the bridge backing, with holes to allow pins to go through the plate, solder to this with pure gold, (using as little gold as possible) two tubes of platinum made to fit closely over the pins. Attach to this the old facing or a duplicate, in the same manner as in attaching the facing to the jacket crown. Cement this on and you have a permanent repair without trouble of taking off the bridge.

Some other practical uses for porcelain work may be found in fusing pins or porcelain buttons on blocks, repairing cracked blocks, contouring teeth and portions of gum sections, making two blocks continuous, coloring teeth with mineral stains or bodies, to match anomalous shades, painting gold fillings on artificial crowns, etc. In post crowns, perfect adaptation to the root with porcelain can be had by fastening the screw post in the root first, and proceeding as in the attachment of a cup facing, making the entire crown with the exception of the veneer facing, of the porcelain body."

A Tooth in the Nose.

An editorial in the *British Dental Journal* cites the following interesting case: "At the meeting of the Medical Society of Christiania, Dr.

Dave showed a tooth removed from the nose of a woman aged 53 years. The patient had complained of ear trouble, and during the ordinary examination the tooth was accidentally discovered. It was situated at the junction of the floor and external wall of the nasal cavity, and was easily removed from a small depression. It is said that the patient had all her teeth, although they were placed somewhat far apart, and therefore the abnormally placed tooth may be regarded as a supernumerary one. It resembled a milk canine, and the end of the imperfect root was covered with a fold of mucous membrane, with stratified epithelium. The speaker suggested that part of the mucous membrane of the mouth, with its tooth germ, had become impacted between the superior and premaxillary bones, and thus cut off from the cavity of the mouth. Another speaker criticised this foetal dislocation, and believed it to be due to an inversion—a development in the wrong direction—by which the tooth had grown upwards into the nose. The same speaker also pointed out that the stratified epithelium of the mucous membrane did not prove a connection with the cavity of the mouth, as it is known that cylindrical epithelium cells after irritative processes, are replaced by flat ones.”

Pyemia as a Sequela of Pyorrhea Alveolaris.

In a communication to the *Dominion Dental Journal* Dr. A. E. Verinder cites the following case :

“A gentleman came under my care some three weeks since, who had been for some two years past under treatment by different members of the medical profession. They had all treated him for the same malady—malaria—and his last physician had ordered a complete change, in order to save the patient's life.

“Taking advantage of his vacation to have a troublesome molar attended to and filled, he consulted me to repair the wrong. On inspecting the oral cavity, I found a marked receding of the gums, and, probing, found a diseased process almost in its entirety. On pressure, a foul, unhealthy pus exuded—the first intimation I had of any odor. My suspicions now being aroused, I questioned him minutely in regard to the symptoms, and I found a febrile condition, with coated tongue and a temperature of 103°. He complained of headache, constipation, dizziness, sleeplessness, loss of appetite, and at times during the last twenty-four hours, nausea. Noting the conditions, I told him he had ‘no more malaria than I had,’ but was suffering from the absorption of this septic matter. To convince him, I placed the hand-mirror in such a position as to give him a view of the exuding pus, furnishing evidence that some-

thing was wrong. He accordingly concluded to try my suggestions, with the result that after a vigorous and stimulative treatment—both systematic and locally—combined with proper antisepsis, he began to improve rapidly, and a week since he journeyed home, expressing himself a strong and healthy man for the first time in two years.”

“Taking Cold” After Extraction.

Dr. A. H. Beese contributes an article to the *Dominion Dental Journal*, on this subject; an abstract of which is as follows:

“Cold may cause inflammation, but the more common causes of this trouble after extraction are probably due to disease of parts comprising the socket of the tooth and very generally a filthy and neglected state of the mouth. When we consider the presence of millions of micro-organisms in the mouth, it is a wonder that there is not more trouble resulting from wounds therein, although wounds on healthy mucous membrane heal more rapidly than external ones.

Prophylactic treatment will avert or lessen the disturbance. After extracting teeth showing signs of root or periosteal trouble, the socket should be well syringed with some warm antiseptic solution and bleeding encouraged, as this will lessen the congestion. A plug of cotton, wool, or any other substance should not be left in the socket, as this retards healing. Of course this would not apply to treatment of excessive hemorrhage. A mouth wash may be prescribed to be used frequently, especially during the first couple of days after extraction. An efficient and pleasant wash is as follows:

R Listerine.

Glycerin - - - - - aa ℥ i.

Aq. Rosæ - - - - - (ad) ℥ viii.

M. et ft. lotion. Sig. Rinse the mouth out with a wineglassful several times a day.

If there is great swelling, cold applications externally are in order. Pain can be lessened by washing out the socket with warm water and putting in a piece of cotton, soaked in tinct. opii with chloroform and oil of cloves, and leaving it there for an hour or two. I find that if the patient keeps the mouth clean, and uses some antiseptic wash, such as listerine, or euthymol, that there will usually be very little bother in healing. Dirty instruments may cause different kinds of infection, and filthy, careless dentistry will certainly augment any inflammatory trouble. Various local septic diseases, such as erysipelas, phagedena, etc., may be caused. Healing may be retarded by mechanical irritation, such as is

caused by the presence of small fractured pieces of the alveolar process. These should be removed. It is practically impossible to altogether exclude micro-organisms from mucous cavities, but we can minimize their action. If granulations become excessive they can be touched with silver nitrate, or copper sulphate. If they become weak and edematous, some stimulating lotion, as alum, or zinc sulphate—two to four grains to the ounce of water—may be used.”

A Few Practical Points.

From an article in the *Journal Brit. Dental Association* by L. Matheson, we abstract as follows:—

“I have to present for your notice one or two considerations in respect of some practical details of every-day work.

To begin with, there are one or two forms of probes which I should like to mention.

One is a form of probe that I prefer to any other for the examination and definition of roots more or less hidden, and of the cervical margins of labial cavities extending below the edge of the gum.

The straight, tapering shank is bent upwards at a very slight angle, for about a quarter of an inch, and then downwards for an inch, at an angle of 45° . This probe is not blunt, but pointed.

The second kind of probe is one that is tapered to a fine point, and is quite straight, except at the extreme tip, which is bent at a right angle to the shaft, for the length of a sixteenth of an inch or less. Similar instruments are a pair of curved probes, of the form commonly used, but having the rectangular tip of the one just mentioned. These three shapes are invaluable for discovering hidden approximal cavities . . .”

“Another matter that I feel strongly upon is the use—or rather, the abuse—of clamps with the rubber dam. In very many cases where clamps are commonly used, ligatures would do as well or better; and, as a matter of practice, it may be maintained that the rubber can be kept in position without clasps on all teeth, except lower molars and second upper molars. Occasionally the first upper molar requires clamping, and very occasionally a bicuspid. By the well-known device of a bead, or a bit of amadou knotted into the silk, a ligature will often effect the same purpose as a clamp, and with very much less distress to the patient . . .”

“I will, with your permission, occupy a few more minutes in drawing your attention to two modifications of the usual form of collar crowns both of which, I think, fill a niche of their own. The first of these was introduced by Mr. Whittaker, of Manchester, and consists of a form of

crown especially adapted for laterals and centrals. In trimming the root, Mr. Whittaker leaves intact the palatal enamel which, in most cases, projects considerably beyond the neck, where cementum and enamel meet. This retention of the palatal enamel necessitates such a special contouring of the palatal portion of the collar as that its gingival margin shall fit the neck of the tooth accurately, while the other margin shall give room for the projecting enamel; in other words, the gingival margin has to be less in circumference than the other. Consequently, the collar, when fitted, can only be got into place by carrying up the palatal portion first, and then springing the labial portion over the labial margin of the root. It is claimed that this shape of collar adds greatly to the stability of the crown, inasmuch as it enables the latter absolutely to resist the great forward pressure sometimes exerted by the bite. The method of springing the collar into place precludes the use of a pin in the pulp canal; and, indeed, it is urged that this is an advantage, as the pin becomes quite unnecessary."

Dentistry in Spanish-America.

IN an article in the *Pacific Coast Dentist*, Dr. G. W. Cool has given an interesting account of dentistry in this country, and we append an extract.

In Mexico and most of the Central American countries there is no such thing as dental legislation. In Mexico and Guatemala I know of no restrictions upon the practice of dentistry other than his own conscience and the revengeful nature of the inhabitants. In Honduras and Salvador there is a form of examination which must be undergone by a person who seeks permission and license to practice dentistry. The examination, however, is such as would be considered very easy by the average American dental student. A nominal fee is charged by the examiners for each applicant appearing before them. A degree from any American college exempts the holder from this examination, he being admitted to practice upon the presentation of his diploma. Costa Rica is in marked contrast to the other Central American states in the matter of dental legislation. There one must hold the degree of Doctor of Dental Surgery before he can be permitted to take the examinations for admission to practice. The examinations which are oral, are quite searching. All applicants are examined before the Proto-Medacrata, or Board of Medical Examiners, who usually

call in two dentists of recognized standing and ability to assist them in determining the eligibility of candidates for dental licenses. The examination and license fee in Costa Rica is \$25, but the Costa Rica certificate entitles its holder to practice, without further examination, in Spain, Cuba, the United States of Columbia, and Venezuela.

In none of the Central American states are the laws governing the actual practice of dentistry very strict. Practitioners of dentistry are not hampered by any restrictions (of any consequence at least) upon their professional methods. There is almost no way of punishing malpractice unless it is of a very flagrant nature, and even then the punishment by no means "fits the crime." Partly as a result of the laxity of the dental laws, and partly on account of existing social and economical conditions, there are many inferior dentists doing their deadly work in the Central American states and in Mexico; but these men have a clientele composed entirely of the poorer class; and here I may remark that the social line between the richer and poorer classes is much more distinctly drawn in the Spanish-American countries than it is in the United States. This is partly due to economic conditions which tend to make the rich richer and the poor poorer; and partly through the hereditary aristocratic tendencies of the race. There seems to be a general idea in this country that any dentist, however slight his attainments, may get the highest prices for his work in Mexico and Central America. Nothing could be more erroneous. As a matter of fact, the class of dentists who work for the poorer people in those countries receive smaller compensation than men of light caliber get in this country. Nevertheless, legitimate dentistry is thoroughly appreciated and splendidly compensated for in Spanish-American countries by the better classes. The people are naturally conservative, and are particularly distrustful of people from the United States, but once an accomplished American stomatologist gains their confidence he may depend upon receiving the most liberal patronage. No people in the world more thoroughly appreciate good work; and they fill the dentist's heart with gratitude by the exactness which they follow all his direction regarding the care of the teeth, etc. While practicing in Central America the writer has frequently had his operating rooms filled with the friends of the patient, all watching with the greatest

interest the progress of the work. In fact it is quite usual for ladies to attend the dentist's office in parties. I have said that these people have a great distrust of the average traveling American, and I discovered during my ten years' experience in Spanish-America that this distrust may only be removed, first, by the presentation of proper credentials and recommendations, and secondly, by demonstration of one's ability to do good work. When once their confidence, so hard to get, is fully gained they are as loyal as one could wish. I was fortunate to be properly introduced and vouched for; and during these years, in which I was favored by the practice of the wealthiest and most aristocratic people of the countries mentioned, I have never had a complaint about fees, though my charges were what in some countries would be considered very high.

Though I was, so to speak, an exile from the land where the code of dental ethics prevails, I am proud to say that I always abided by its provisions. In Guatemala I never had a sign upon my office, never issued a business card, did not even use my professional title; and only during the last few months of my five years' stay in Guatemala did I ever have a door plate. That I purchased and used simply to avoid the confusion which sometimes arose from the similarity of the appearance of the houses.

Practical Laboratory Hints.

Dr. J. G. Templeton read a paper on the above subject before the Illinois Dental Society and from the published article in the *Dental Review*, we extract the following:—

“To solder a cap on a gold tube intended for an artificial crown, lay the cap on about a tablespoonful of finely cut asbestos, put the tube in place on the cap, drop in the solder and a little powdered borax, then blow a yellow flame on the asbestos all around the tube until the solder flows, and there will be no danger of melting the gold.

In vulcanite work the best results may be obtained by making models, one-fourth marble dust and three-fourths plaster, also the same in flasking the case.

To keep plaster from sticking to palatine surface of plate just before beginning to pack the case coat the model with a thick lather of good soap. In finishing the plate, always trim the rim low over the bicuspid leaving it high as can be worn over cuspids, and the same over and back

of the second molars do not file rim to a knife-like edge, slightly bevel inside of rim at the top extending down about three-sixteenths of an inch.

To make platinum and gold plate, melt with blow-pipe pure gold on a piece of platinum and roll to the desired thickness, the result will be as good as any you can buy, and you will have saved at least thirty cents per pennyweight.

United States gold coin is $21\frac{6}{10}$ carats, fine. Instead of buying 22 carat plate from the supply houses for crown and bridge-work, get United States gold coin (the older coins not alloyed with copper are best) and you will save \$1.40 on each \$5 worth. A \$5 gold piece weighs five pennyweights and ten grains.

Much can be saved by the dentist making his own solders, and there is no reason why every one should not do so. Good formulas are to be found in both Harris and Richardson; also elsewhere. The writer has for several years used a formula obtained from Dr. Melotte, which is as follows:

Take a United States \$5.00 gold piece, 20 grains coin silver, 10 grains pure copper, 6 grains English toilet pins; melt the silver and copper together first, after melting this and the gold together, add the pins, flow into an ingot and roll, cut it into small pieces and melt again if it should not roll well first time, this will give a solder a little more than 19 carats fine, and flows nicely on coin gold being the same color.

This we call No. 1. Now take of No. 1:

| | | | | | |
|-------------|---|---|---|---|----------|
| No. 1 | - | - | - | - | 89. grs. |
| Coin Silver | - | - | - | - | 7. grs. |
| Pure Copper | - | - | - | - | 4. grs. |

Melt together and roll and we have a second grade which we call No. 2, and which will flow on No. 1.

6 dwt. pure gold.

2 dwt. copper.

1 dwt. fine silver.

And you will have a 16 carat solder. In my practice only Nos. 1 and 2 are used, made according to the formulas given above."

Obtundent for Sensitive Dentine.

The following item we copy from *The Dental Practitioner and Advertiser*:—

Dr. F. T. Van Woert, of Brooklyn, uses a 50 per cent. solution of sulfuric acid as an obtundent for sensitive dentine. He discovered it by accident, while endeavoring to open the pulp canals of a devitalized

tooth with the acid solution. The rubber dam was over the dead tooth, and also over a carious bicuspid which stood next it. In some way the solution got into the cavity of the living tooth, which he had in vain been striving to excavate. To his surprise, he found that the tooth which had been agonizingly sensitive, was now completely obtunded. Since that time he has been using it with very gratifying results, although not in every case with complete success. Usually, however, it enables him to excavate painlessly. He uses but little at a time, and as the affinity is soon satisfied it becomes self-limiting and will do no harm. If too much is used, it can be readily neutralized with a solution of soda bicarbonate.

The Care of Children's Teeth.

Regarding this subject, Dr. J. N. Crouse, in his continued article in the *Dental Digest* says:—

“To take proper care of a child from the beginning of second dentition to maturity is no small task. To see to it that the teeth are in proper position in the mouth, well cared for, and in good chewing condition when the patient reaches twenty-one, requires more painstaking effort on the part of both operator and patient than either give as a rule.

What proportion of dentists take pains to give the parents of all the children they work for the information they need? How many parents are well informed concerning even those things which seem to the dentist too simple to be explained? Ask the average parent how many teeth there are in the first and see what answer you will get. Then tell him or her that there are but twenty, and that all the molars which come back of these twenty are permanent teeth and should be carefully watched, and note the look of surprise. No more frequent mistake is made by the parent than that of allowing the sixth year molar to decay, supposing it to be a temporary tooth. How many operators caution parents on this point before it is too late? How many urge frequent examinations, especially in the case of children?

All through childhood children should go to their dentist every few months; if they neglect to do so he should send for them. Parents do not know that as soon as the sixth year molar is erupted it generally needs some attention, which if given in time saves much trouble. These teeth being the first of the permanent set and coming as they do about the sixth year, the child is so young that but little care is taken to keep the teeth clean, and often decay has made considerable progress in the imperfect fissures before the teeth are fully erupted. Had they been attended to at the proper time, a moderate amount of care would have ar-

rested the dental caries and kept these valuable organs in good condition, but from neglect the pulps have become exposed, and the teeth either been extracted or the chances of saving them lessened.

If, when these teeth are first erupted, the open and defective fissures, so common at this early time of life, are filled with tin, oxyphosphate, or even amalgam, they can be kept in a fair state of preservation until ossification is more complete, when a better filling can be made and the organs preserved. And if we are doing our duty all this time, we are instilling habits of care and cleanliness which will be of invaluable benefit in the way of lessening dental caries, and, as we have stated in previous articles, no greater or more valuable service can be rendered by us. If the tendency to decay is very pronounced we should look into the causes, and the chances of improving this condition are most likely to be found in the methods of living. A most important duty is then before us, that of regulating the patient's diet."

Balsam Varnish.

Dr. Howard's antiseptic varnish for coating cavities preparatory to filling, consists of Canada balsam, to which has been added mercuric-chlorid and thymol, evaporated over a water-bath from twenty to twenty-eight hours, and finally dissolved in chloroform. The proper consistency can only be determined by experience and careful observation, and it is upon this that its usefulness depends. When improperly prepared it is valueless. It is not, of course, intended to retain fillings, but to aid in their adaptation, and to act as an anti-thermal and protective coating.—*Dental Practitioner and Advertiser.*

A Hemostatic Mixture.

Dr. R. Park, in the *Medical News*, recommends a mixture of antipyrin and tannin for hemorrhage. Adding antipyrin in powder to the alcoholic solution of tannin, the combination resulted in the formation of a gummy mass, some of which used on a sponge, at once stopped the hemorrhage. He has since found that the two substances may be mixed in any proportions, and there is only one difficulty in connection with the application of the sticky precipitate. It is so remarkably adhesive that after the desired result is obtained, it is difficult to remove the cotton wool on which it has been applied, and it may be necessary to wait until granulations have formed.

The Saliva in Prognosis.

In an article in the *Dominion Dental Journal* Dr. M. D. Cowen says :

"I have, after devoting considerable attention to it, come to the belief that the saliva is an agent which may be employed to materially assist in determining the success which will attend the filling of many cavities, and that it is of sufficient importance to warrant greater attention at the hands of the dentists than it receives. . . .

"We may fill two cavities precisely similar to all appearances, in different patients, physically alike; we may do our work with equal thoroughness. In one, the filling may prove a lasting blessing, while the other may, within a week or so, return and complain of inability to drink anything, either hot or cold, without causing undesirable pain, or sharp, shooting pains, which reach to the eye or the ear, and of it being impossible to touch the filling with anything metallic. . . .

"The temperament of the patient will certainly help us; so also will the saliva, I believe, to a much greater extent than we generally accept. I have noticed in my practice that it is seldom that any of my patients in whose mouths the saliva is of a thick, mucid, stringy character, and gathers in little bubbles at the corners of the mouth when the lips are closed, or form strings, as it were, from one lip to the other when the mouth is open, or who has a gummy, sticky generally filthy looking deposit of greater or less extent from the saliva on the lips forming a light circle at the point of contact of the lips, are troubled with the symptoms previously described. I have therefore become very confident of success in filling cavities in the teeth of such a patient by using only the ordinary precautions and following the usual procedure. On the other hand, if my patient is one who is gifted with an excess of saliva, and that of the most watery description, I would not attempt an all metallic filling unless the cavity was of a very shallow nature. In other words, a filling that I would insert for the first patient, with only ordinary precaution, I would for the second patient use extraordinary precaution, probably a heavier capping, a combination filling, or at least proceeding as if I knew beforehand that the tooth was going to be subject to after influence."

To Cut Cavities in Artificial Teeth.

Dr. Geo. W. Cool says he uses, with satisfaction, copper cylinder points, in the dental engine, in connection with corundum or carborundum and turpentine for drilling cavities in artificial teeth. He says they cut rapidly and it requires only a few moments to form a cavity.

Dentistry in France.

An editorial in the *Dental Review* states :

“For the first time in the history of dentistry, a national gathering has been held in Bordeaux. It is estimated that two hundred dentists were present from different portions of the country, about twenty-five being from Paris. In view of the fact that the dental law is only three years old this is a good beginning. It must be remembered that prior to 1881 no systematic teaching of dentistry was to be had in all France. During that year the dental school of Paris was founded and a little later the Institute Odontotechnique was organized, so that with the exception of the self taught, the M. D's. who practiced dentistry, the foreigners from all climes there was not the elements for a scientific society. Now all is changed. Two schools prepare pupils for the examinations, but do not confer the diplomas. The term of study must cover three years. Examination on dental subjects takes place in the third year only. At present the preliminary examination is about what it is in the United States, equivalent to a high school diploma. This is not sufficiently advanced for the age either here or in France. The State examination is not sufficiently rigid it is claimed. A professor from a medical school and two underprofessors do all the examining for the first and second years. The third examination is conducted by a titular professor of the medical school and two dentists from the hospitals by appointment. As it is easy to obtain an appointment as dental surgeon to a hospital, and easier still to fill such a position the examination cannot be very thorough. All this will be reformed in time, however. The diploma is not doctor but *chirurgien dentiste*, so that a dentist is Mr. in France as he is in England.”

The Control of Daylight, as Related to the Care of the Dentist's Eyesight.

In a paper read at the California State Dental Society, and printed in the *Stomatological Gazette*, Dr. Van Orden discusses this subject in its various phases. Regarding reflected light he says :

“Let us consider how day light can be made to be most nearly sky light. An opaque roller-shade, working from the very bottom of the window and excluding all stray rays of light up to its upper margin is the desired means. One who has learned the value of this lower shade will scarcely exceed the bounds of reasonableness when he places it as second only to the appliances with which operations are performed. On one occasion the writer became afflicted with inflammation of the eyes and

consequent photophobia. Upon investigation, it was noticed that during a certain portion of each morning glaring rays of light were reflected from the brass signs and white awnings of a store situated two stories below upon the opposite side of the street. The substitution of an opaque shade for the light transparent curtain which had been used merely to exclude the vision of passers-by, quickly cured what threatened to be a serious affliction. The operating chair was at a later date moved to a room of smaller dimensions, and it was found that a strong reflected light was projected upon the ceiling and upon the walls that approached rather close to the chair. This was found to be caused by large white awnings, and the light color of the opposite building. Tearing down the partition relieved a part of the difficulty, but the ceiling and the rear of the room were still flooded with light, and when an attempt was made to relax the muscles of accommodation of the eye, by occasionally looking away from the work, this end was baffled by the useless flood of light in all parts of the room. A secondary curtain was then resorted to, suspended from the ceiling and hanging just about over the patient's head, and working upon a roller. This was operated by a stick and hook, and could be brought into use at any moment without interfering in any degree with the operating light; and thus was secured a grateful relief to needlessly overtaxed eyes. Short portieres, worked by rings, and cords from the sides, might suit the fancy of some better, and become an ornament to the room; or some permanent drapery—always opaque—might be placed in position."

One Method of Filling Root Canals.

In an article in the *Dominion Dental Journal* Dr. F. Woodbury gives the following method:

"Secure an opening in the crown of the tooth in line with the pulp canal, either by drilling away enamel on the inner wall of the cavity or making a new opening on the lingual surface. Measure the length of the tooth with a hooked nerve broach and mark the length on the end of a card. Have it exact. Write on this the name of the patient and the tooth. Select a Gates-Glidden nerve canal drill, a little larger than the apical opening. Mark the length of the root on the shaft and carefully drive your engine, allowing the point to go through the apex slowly, so that the canal at the end may be smoothly reamed, and the parts not unnecessarily wounded. In doing this withdraw the point often, so that when it passes through it will not carry a mass of debris with it. Stick the drill just used in the marked card so that it will not be mixed with others; select another, one or two sizes larger, and after marking the

shank as before pass it up to the mark or within a hair's breadth of it. The point of the drill will thus be just at the apex, but being spear-shaped the cutting part will be a half-line, or perhaps a little more, short of the end of the root. This gives a cone socket-shaped canal. Stick this drill also in the card. You can now finish the operation or further disinfect, as the case may indicate. In this case the chair will be rotated so the light will fall pleasantly over the shoulder, and the patient supplied with a recent magazine, while the operator and card will retire to the laboratory. Here is found a small slab of ivory or bone about a quarter of an inch thick. A hole is drilled through it, it is then reamed out by the smaller nerve drill in the card, then the larger one is introduced, until the point is seen level with the under side of the bone slab. Thus is found in the bone the same shaped canal as we have in the tooth. A strip of pure block tin, a little longer than the tooth, is then filed up to about the size of the large drill. It is grasped by a pair of flat-nosed pliers and gently forced through the bone slab by rotating, when through make the end round and smooth.

"Measure the length of the root on the tin from the card, and place it in the root, and if the measurements have been made correctly it will go to its cone-socket seat tightly and firmly. It can go no further, and there is no reason why it should not fill the apex and be smooth. If desirable to test it before finally filling the tooth, cut off the tin just inside the cavity and fill the crown with gutta percha, but leave the tin long enough to be reached with spring pliers. When the time comes to finish, remove the tin plug, cut it off about three-sixteenths of an inch long, thoroughly disinfect, and dry the cavity and pin, and carry it to its home with any flat faced instrument large enough not to slip by it on the way up, then gently tap it to its place. The operation may be finished in any way deemed best.

"The nerve drills should be dipped in campho-phenique, or some other good disinfectant while drilling. This is important as a matter of cleanliness, and it makes the chips stick to and come out on the drill, instead of being pushed through the apex."

Neuralgia.

In an interesting paper on this subject in the *Dental Record*, Mr. Henry Blandy says:

"When a dentist speaks of neuralgia, he means a nerve pain of a more extended character than odontalgia, or toothache. When a patient complains of pain of a shooting character in the head, the ear or arm, we say he has neuralgia; and we examine his teeth carefully, and we generally find a decayed tooth, or teeth, or stumps, which indicate the

locality of the nerve lesion which gives rise to the pain. We remove the decayed tooth and we generally cure the patient.

Some little time ago I had a lady patient who had suffered severely from neuralgia in the head; she had been under treatment by a physician for many months; she had been to Smedley's Hydro. for nine months to get up her general health and tone; she had had a course of massage, I suppose on the same principle that muscular rheumatism would be treated, and which is effectually treated in that way—but with no improvement. The racking sleep-destroying pain still continued. She did not believe it could be her teeth, but came to have them examined as a forlorn hope.

There was an upper wisdom tooth decayed, but I diagnosed the lower wisdom as the offender, which was apparently quite sound. This tooth was very sensitive to hot air applied by the hot air syringe, and to cold water. But she declined to allow me to extract it, and decided to have the upper tooth out. It was decayed, and of no great value, so against my advice I took it out. In a week or two she returned: there had been no improvement. Had the upper wisdom tooth been a sound and useful tooth, or been capable of being made into one by stopping, I should, of course, have refused to extract it. . . . On this second visit I was able to get my way and extracted the lower wisdom. I found the nerve cavity full of pus. We all know how painful a simple gathering on the finger may be when the finger swells, and there is heat and great congestion. The tooth cannot swell, and we get the congestion in the confined pulp chamber, consequently there is compression of the delicate nerve filaments, and we get extreme pain. But the pain may not be localized to the tooth and we get what we call reflex neuralgia. Neuralgia might also be caused by the deposition of secondary dentine in the pulp chamber. . . .

“Another obscure cause of neuralgia is the malposition of teeth. I remember two cases. One a medical man of 50 years old, who complained of great pain all over his head. He dare not have chloroform or even gas to have a stump out, which I took to be the upper right canine, under which was a large swelling. I injected cocaine and went for the stump, but the instrument slipped off and I failed to get it. I went deeper and failed again. Then with my saw edge forceps I trephined until I had got a very firm hold and it took a long and strong pull, but when it came I found I had a large canine which had never been erupted. It was lying nearly horizontally in the alveolus. The other case was nearly similar in a patient of 45, whose canine was under sound bicuspid teeth.

A third and very interesting case of malposition causing great neuralgic pain was that of the wife of a coachman, aged about 45. She had

no bad teeth and apparently a healthy mouth. On examination all her teeth were present except the left upper wisdom. The second molar was decayed in the crown. I carefully tapped this—she winced. On extraction I found the palatal root broken off nearly to the neck. The fracture was not flat and even across, but slightly cupped, evidently not fractured but absorbed, as the roots of temporary teeth are generally absorbed by the action of the rising permanent ones. To prove this I immediately extracted the wisdom tooth which was underlying, and it fitted exactly the second molar palatal root. The same thing sometimes occurs with lower wisdoms, which will burrow under the gum and eat their way into the pulp chamber of the lower second molar. I have the following notes in my hospital case book for last year: Mrs. R., 34, neuralgia 11 years, use of arm gone for 3 or 4 years, for 3 or 4 days at a time, had not been able to do up her hair for 5 years. Extractions xx. chloroform. Three weeks afterwards she reported was better and had regained the use of her arm.

Salter gives a case where the right arm was seriously affected—became nearly powerless and was constantly in a state of aching pain—the patient could hardly grasp or hold anything in her right hand. Facial palsy occurred with dimness of the right eye. A week later she had complete facial paralysis, deafness, and her right arm as above. Upper right wisdom tooth removed. Before patient left the house pain of arm and powerlessness had vanished. Patient quite cured in a fortnight.

Teething is recognized by Romberg and Henoch as a frequent cause of paralysis in children, without any apparent cause. According to Fliess paralysis of this sort occurs more commonly during the period of the second dentition. The onset is sudden, feverishness, restless sleep, in morning arm, more rarely leg, paralysed, followed by difficulty of breathing, asthma, palpitation, distortion of face, and squint, ending in coma and death. . . .

“I show you a tooth extracted for a woman of 55, whose eye had become affected by the irritation and neuralgia caused by it, until it went quite blind. The cavity or cavities, for there are two, as you will see, are on the posterior side of this second upper molar. The upper one shows signs of former caries, the lower one does not, but both were sufficiently deep to allow thermal changes to reach the pulp cavity. The tooth, to all external appearance, as you will observe, when in the mouth looked perfectly sound and healthy, and it was only on the most careful examination that these cavities were discovered. . . .

“We should expect to find anæmic girls suffer from neuralgia, and we do. I had an anæmic girl only this week whom her mistress said had been a martyr to neuralgia for months, she could not sleep at nights, was

partially deaf, particularly quiet and silent, and sometimes had been nearly mad with neuralgia. She could not locate it to any particular tooth—I took out six.

There are cases of neuralgia in persons who have lost all their teeth, or in portions of the alveolar process from which teeth have been extracted for years. These are due to previous nerve impressions left by some aching tooth, or, it may be, the compression of the trunk of the branch when it passes through some foramen in its course.

In illustration of the first, I had an old aunt of 70 who frequently had violent attacks of neuralgia in her toothless gums, she would never have submitted to any operation, and I don't think any cure was found for her. Professor Gross explained the pathology of this in this way:—The minute nerves distributed through the wasted alveolar border have undergone compression from the deposition of osseous matter in the canals, and after other remedies had failed he resorted to excision of the affected portion of the alveolus. . . .

“Then you may have neuralgia arising from periostitis with supuration and ulceration of the roots of teeth. There are also mechanical reasons for it. Sometimes a tooth will have a spike of tooth bone on the extremity of its root, which, as it were, pricks the trunk of the branch in its passage to the apical foramen. Then we have many cases of exostosis due to irritation of the periosteum and thickening of the cementum. I show you a number of teeth extracted from a Swiss governess who was a martyr to neuralgia. In fact you may lay it down that anything which interferes with the normal condition of the smallest twig of a nerve will be resented by the whole body, whose nerves are all in complete telegraphic and telephonic communication with it, through the branch offices, the ganglia, and through the great central office, the brain.”

EDITOR'S NOTES.

How Can the Attendance at Dental Societies be Increased?

THIS is a question of paramount importance at the present time. That a very small per cent. of the dentists of the United States are members of dental societies or even attend dental meetings is apparent to those conversant with society affairs. Why this is so is an unsolved problem; yet, we might suggest many things that probably have their influence in keeping many worthy

men away. The question is how can this state of affairs be remedied? To discuss this question in detail would require a vast amount of time and space, so we shall, at this time mention only a few of the thoughts that come to mind. In the first place, society meetings must be made interesting. When clinics were first made a prominent feature of the meetings there was a markedly increased attendance; but they fail to be such an attraction now; at least in some sections. Why? Principally on account of the unsatisfactory manner in which they are conducted. Dentists gather around the clinician and perhaps six or eight get a fairly good view of the operation, and these as a rule, stay there until it is finished. The result is that a great many get no benefit whatever from the clinics. In the past, some of our western friends suggested that clinics and demonstrations be made in such a manner that all present could see. Give them either in an amphitheatre or on a raised platform, and use large models, or a dummy of sufficient size that all could see. It seems to us that this is a most excellent suggestion. If the principles involved in an operation be clearly shown, any intelligent dentist ought to be able to put them into actual practice. For the majority of clinics these principles can be demonstrated on large models, or dummies, or by illustration on a blackboard, and it is not necessary that the actual operation be done in the mouth of a patient. What Society will be first to institute the "dummy clinics"? Many dental societies are late in issuing programs. These should be sent out or announced in the journals at least one month previous to the time of meeting. All papers should be completed and copies sent to discussers, at least one month in advance of the meeting. Few men can present interesting thoughts on the majority of subjects without some preparation, and a few week's notice as it were, would do much toward adding to the interest of the meeting. The Ohio State Dental Society appointed a committee of three to assist in the formation of local societies throughout the state. It is proposed to make these societies delegated bodies and send representatives to the State Society. These, if thoroughly organized, will have their influence towards increasing the attendance of the State Society, but other methods are also necessary. Every society member should feel in duty bound to attend each meeting of his society; by so doing he will set an example and encourage others

to attend. Personal solicitation of worthy dentists will accomplish a great deal toward increased attendance at meetings. If every member would make it a practice to invite personally, by word or letter, five or six worthy practitioners, throughout the state, the result, we surmise, would be a surprise to many. More of our college graduates ought to attend society meetings and we believe it is the duty of every College Faculty to encourage the organization of a student's society in college and then assist in the deliberations of each meeting. By this means, and making it a practice of telling the students of the proceedings of various society meetings any member of the Faculty may attend during the school year, much can be accomplished toward forming a habit, among students, of attending societies and doing society work. As the majority of students have not the means, during the first year or two after graduation to attend society meetings they are apt to lose interest in society work, so they should be watched by the Faculty as closely as possible and be given special invitations to attend meetings. Then, when worthy young men become members of a society they should be encouraged. Don't deride them and be severe even though they may make some mistakes. Teach them gently; put them to work; let them feel a responsibility and their future work will prove the better for it. Factional fights, greed for office, or wire pulling, have no legitimate place in any dental society and are a disgrace to any organization. Personalities should be laid aside and everyone should work for the advancement of the profession rather than for personal aggrandizement. When these things are done we feel sure there will be a markedly increased attendance at society meetings.

SOCIETIES.

Ohio State Dental Society.

Officers elected for 1896 are :

President, Henry Barnes, Cleveland; 1st Vice President, L. E. Custer, Dayton; 2d Vice President, Grant Molyneaux, Cincinnati; Secretary, L. P. Bethel, Kent; Ass't Secretary, L. L. Barber, Toledo; Treasurer, C. I. Keely, Hamilton.

THE OHIO DENTAL JOURNAL.

VOL. XVI.

MARCH, 1896.

No. 3.

CONTRIBUTIONS.

Artistic Staining of Artificial Teeth.

BY GEO. H. WILSON, D.D.S., CLEVELAND, O.

I HAVE two motives in writing on this subject: One, the hope of being able to excite in the mind of at least a few practitioners, the need and usefulness of this easy-to acquire, inexpensive and highly artistic phase of our profession. The other, to teach a few of the simple rudiments of this art, and thereby trust we may have sown seeds that will bring forth fruit with an hundred fold increase.

I am well aware there has been very little written upon this subject, especially in this country; also, that it has been practiced only by few. I can conceive of but two reasons for this: First, A lack of appreciation of the possibilities of three tubes of paint and two small brushes. Second, The mistaken idea, that it is impossible in the dental laboratory without a considerable outlay of money, and a special artistic talent.

That there has been very little interest taken in this work, is apparent from the fact, that we have no outfit for the work put up in this country. There are at least two in Europe: George Poulson's, of Dresden, and Ash & Son's, of London. To all

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intents and purposes, the one is a duplicate of the other, containing the same colors and implements for work. Poulson's are Dresden colors, while Ash & Son's are Lacroix or French colors; so I have been creditably informed. Beside these, Dr. George Cunningham, of Birmingham, England, exhibited at the Columbian Dental Congress his set of paste colors. Poulson's and Ash & Son's are stains, they do not add anything appreciable to the surface, but color; while the pastes add a material to the surface, and in many places produce the desired effect that can be secured in no other way. Through some inadvertency this clinic of Dr. C.'s is not even mentioned in the transactions of the congress, and I have been unable to learn much in regard to the materials and methods of using. However, this makes little difference, as we only desire to encourage the use of those methods we have at hand.

Any one desiring to begin this work can purchase either the Poulson or Ash & Son's set, through the dental depots, or the materials I shall name, at any of the art stores. Not knowing the location of such a store, any lady interested in china decoration, can give the desired information and probably furnish the materials needed.

I shall give two lists: The first is all I recommend to the novice. The second, to be procured as the emergency requires, or the novitiate's ambition dictates.

First. Sepia; light gray, No. 1; ivory black; oil of cloves; alcohol; one small pencil brush; one stippler brush; one spatula, horn or steel; 1 glass slab.

Second. Rose pompadour (gum color); ivory yellow; brown yellow; celestial blue; and relief white. These colors are the Lacroix, except the relief white, which is Dresden.

All mineral paints have to be burned into the porcelain. We will describe this process later.

We will first describe the use of the various articles: A plain glass slab, on which to mix the colors in small quantities; a spatula with which to grind or mix the paints together, or with oil; a stippler brush, a short stubby square end brush, with which to spread or even the paint by striking (stippling) with the end of the brush; alcohol, with which to clean the teeth, the brushes, and to remove the waste paint from the slab; oil of cloves, to thin the paints as necessary for the desired effect. There are other

oils that can be used, as oil of lavender, fat oil of turpentine, etc., but the oil of cloves is probably already in the office. Gray and black are the foundation colors of nearly all the work we will probably be called upon to do. The ivory black will rarely or never be required by itself, but is used to deepen the color of both gray and brown. A very little black will have a decided effect, and should be thoroughly mixed before applying.

Observation of the natural teeth in the mouths of our patients, is absolutely necessary to distinguish the brown and gray shades; also a little time must be spent in the laboratory in studying the effect of a thin coat and a thick coat of each of the colors, and more especially to note the effect of the stain upon the original color of the porcelain tooth. If the tone of the tooth is yellow, and brown is added, it will not only deepen the color but will bring out a most decided brown color; but if the tone is blue, or gray, then the brown would first deepen the original color, blue or gray, and would only give a decided brown, as quite a quantity had been added.

The study of the fact I have just mentioned means the success or failure of staining porcelain teeth. Mastering this point means successfully producing in the laboratory what the eye for color has seen at the chair, is needed.

It must not be supposed that this method can be used in all cases; it is the exception and not the rule. There are two classes of cases to which it is especially applicable. The one where we have not at hand such a set of teeth as we desire, in color. We can deepen the foundation color, change the tone from gray to brown, or brown to gray, and vary these from a light tint to a very decided one. It should be borne in mind that we do not produce an underglaze color, but one upon the surface; hence its legitimate use is to produce stained teeth, which are more suitable for middle and aged people, than for the translucent effect of earlier life.

The stains can be largely removed by the use of sandpaper, or by the severe use of the felt wheel and pumice. It is not necessary in the proper polishing of vulcanite to remove the stain, but by an indifferent use of the sandpaper and pumice, a portion of stain will be removed, but not by any use the denture can have in the mouth. The other class is in partial cases, to reproduce peculiarities of the natural teeth. It is not uncommon that we

have brown and gray discolorations in the same tooth, as brown at the gingival portion and gray at and near the proximate surfaces, ranging from incipient black decay upon the proximate surfaces, appearing gray through the translucent enamel, to the more extensive gray color of leaking fillings.

Desiring to change the tone of the tooth, or give a deeper shade, it will be necessary first, to remove all wax and clean the tooth with alcohol, drying it with a clean cloth, then hold the tooth by the pins in a pair of pliers; having mixed the color with oil of cloves, either thin or thick as we desire a light or dark shade, apply with the pencil brush. The paint can be more evenly spread with the stippler brush. The surface should be gone over with a stipple motion, that is, striking with the end of the brush, the brush being held at a right angle to the surface of the tooth. At any place that the paint is not heavy enough, more can be added by the pencil brush and then stippled. If the color is too heavy at any portion of the tooth it can be removed by wiping lightly with the end of the finger and then stipple. When all of the teeth are so treated they are placed upon a slab to dry.

To fix the color and give it a glazed surface, it is necessary to subject it to a high heat, about 2000 degrees F., or the fusing point of gold. This burns out the oil and fuses the solid particles of the stain which unites with the surface of the porcelain. It makes little difference how this heat is obtained, just so we get it, if evenly applied, that is, not so suddenly as to fracture the tooth. Having thoroughly dried out the oil by placing the fire-clay slab over the Bunsen burner, the teeth can be safely subjected to the higher heat, and brought to the proper temperature in two minutes time. Any furnace can be used, or, not having one, any one having a blow-pipe can easily improvise one at small expense. Get a piece of fire-clay slab about an eighth of an inch thick, upon which the teeth are placed, with the pins resting upon the slab. Shape a piece of No. 36 standard gauge platinum plate, so as to cover and enclose the teeth, except one side, which is left open as a peep hole.

This miniature oven or furnace, containing the teeth just from the brush, is placed over the Bunsen burner for about five minutes, when the flame from the blow-pipe is placed against the under side of the clay slab, gradually bringing it over upon the top of the platinum. Two minutes' work of the blow-pipe should suffice.

Take away the blow-pipe and turn off the flame of the Bunsen burner at once, remove the platinum cover and permit the teeth to remain upon the slab till they are sufficiently cooled to handle with the fingers without discomfort, when the work is finished.

The work will require less time than I have been in telling it. I have taken a porcelain tooth I had fitted to the root, stained, burned, cooled, and returned it to the mouth in fifteen minutes time.

While the instructions I have given, have been for evenly shading the teeth, by the same process, that is, laying on with the pencil brush, whipping off with the finger, and stippling, any result desired can be produced.

If we desire to combine colors we should always burn a sample to know what the result will be. Thus the ivory black will deepen the gray or brown according to the amount of black used, but if we combine blue and yellow, we will get green, then by modifying this green with brown, we will get the peculiar green stain so often found in the mouth.

Salivary calculus effect can be produced by laying on the relief white without thinning with oil, burn on and then stain with brown. White spots or an over-deposit of lime salts can be represented, by a thin layer of relief white stippling and burning in. Atrophy and worn conditions are produced by grinding and then staining.

Gum color, either light or dark color, according to the amount of rose pompadour used. A still lighter effect can be produced by building up the portion representing the gum, with some white body as No. 1 of the Downie bodies; bake it on, then paint with the gum color and fire.

I have not been successful in imitating gold fillings. Precipitated gold is the form of gold accompanying the English and German sets; they appear perfect when first applied, but will not stand the wear necessary in the mouth. Dr. Grant Molyneaux informs me that the chlorid of gold will withstand the wear. I have not tested it. To burn on the gold will require about 500 degrees less of heat than the other colors mentioned.

Correction of a Double Difficult Case of Irregularities of the Teeth at Thirty Years of Age.

(From a Forthcoming Work.)

BY J. N. FARRAR, M.D., D.D.S., NEW YORK CITY.

Continued from page 66.

FIFTH STAGE. At the close of the fourth stage the time had arrived for turning the four incisor teeth.

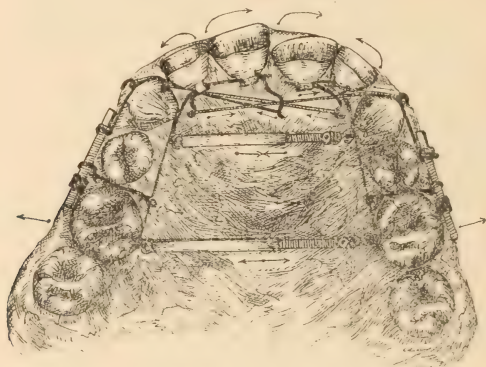


Fig. 13 —Turning the four incisors by crane levers and elastic rubber rings (A).

Fig. 13 illustrates the case with the same metallic mechanism, shown in Fig. 12, together with a second transpalatine screw-jack, for widening the molar region of the arch. In addition there is represented four crane levers, all of which were attached to the incisors by means of gold Talbot ferrules. These levers were acted upon by small elastic rubber rings stretched and attached to the other parts of the mechanism as shown.

The object of retaining the anterior screw-jack was not only to hold the cuspids and incisors steady in their new places, but to furnish an unyielding anchorage for these rubber rings.



Fig. 14,—A Crane Lever.

These crane levers played loosely in short pieces of tubing, soldered transversely to the ferrules; they were situated upon the lingual sides of the ferules and near the gum margins, (See Fig. 14). These levers, which were made of common pins having the points cut off, were projected through these tubes up to their heads, and then they were bent into the form shown in the figure to prevent them from working out and at the same time to enable them to hold the rubber rings so that they would act properly.

These levers are convenient to the operator, because they can be swung outward like a crane, making it easy to catch the rubber upon the hooks. When these rings are applied the levers are given their liberty, when they fly back of themselves into the mouth out of the way of occlusion of the dental arches.

These rubber rings were stretched here and there and caught not only upon hooks on the clamp bands, as shown in Fig. 13, but sometimes they were caught upon the posterior ends of the screws on the buccal sides of the bands. Of course, there were various

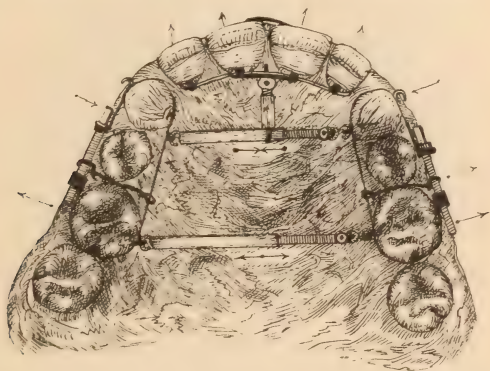


Fig. 15.—Nesting the turned upper incisors to aid in preventing them from returning (A).

other slight changes made in the direction of the force, as also in the degree of force applied, that are not presented in the figure. The changes in the degree of force were sometimes made by having the rubber draw from the end of the lever next to the tooth instead of from the hook. When it was necessary to use a *medium* leverage, the long lever was so bent that its hook was nearer the ferrule. All the incisors were by this means turned into their proper places, but the left central was stubborn and required long and persistent effort; the root was probably crooked.

After the incisors had been turned a little *past* their proper places, to somewhat break their reactive tendency, these levers were cut close to the tubes and removed, leaving the ferrules (and the pieces of tubing) to remain upon the teeth for future use. A short (new) radial jack and the long bar was then added to the mechanism to force still further outward, and fully to the proper line, the four incisors. (See Fig. 15).

The object of suspending the process for moving forward the incisors in the early part of the operation (see Fig. 10) and before beginning to turn them, was to furnish an opportunity for *nesting* these teeth into the anterior walls of their sockets, an act that I have found to be a considerable aid in preventing the teeth from turning back to their former positions.

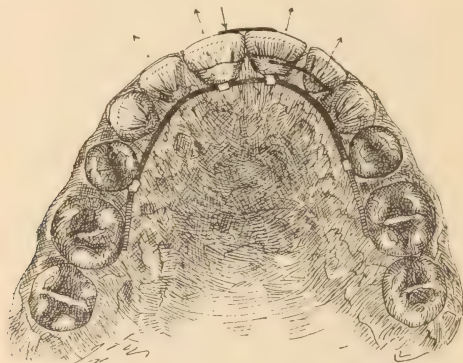


Fig. 16—The case with a temporary adjusting retainer applied to the teeth (A).

After all the incisors that would cause the best facial contour, had been moved to the line, all the other parts of the mechanism (not the incisor ferrules) were taken off the teeth and replaced by an adjusting retainer consisting of a bow of gold wire (the size of a pin) with two anchor ferrules made to fit the first bicuspid. (See Fig. 16). The object of this retainer was two-fold: 1st. To hold in place the teeth that were already upon the esthetic line, and to adjust those that might get out of their proper places. This mechanism, devised mainly for pushing the incisors forward, was operated by gradually moving the bow anteriorly, by moving the ferrules posteriorly by turning them around the extremities of the bow so that the threaded nuts (soldered to the ferrules) fed along upon them. All the teeth having been adjusted these

anchor ferrules (which were one-eighth of an inch in width) were then cemented upon the first bicuspids with phosphate of zinc, to hold the bow as a permanent retainer.

Sixth Stage. The next stage in the process of regulating the case, was the elevation of the too short instanding left (upper) lateral incisor, to make it even with the other teeth.



Fig. 17—The elevating mechanism (A).

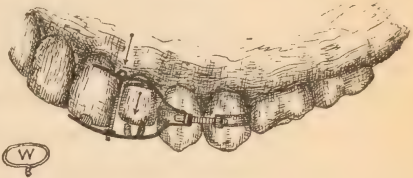


Fig. 18—Elevating the arrested incisor.

Fig. 17 represents this mechanism, which I denominate the excelsior elevator, and Fig. 18 illustrates the case with the mechanism applied. This (gold) screw-acting mechanism (the best yet invented for this purpose) consists of a platinum wire ring and a clamp band with two round wire arms projecting anteriorly from its anterior part; these arms are connected midway of their length by a delicate screw.

The platinum wire is used to encircle the neck of the short tooth, to serve as a collar for attaching the mechanism to it. This mechanism is anchored to the left cuspid and first bicuspid, the wire arms being so adjusted, that the lower one projects along under the cutting edge of the left central, while the upper one projecting along above, it is caught upon the knot made by twisting the ends of the platinum wire (W) that encircles the lateral.



Fig. 19—The Retainer (A).

Upon the extremity of the lower wire arm is soldered a V-shape saddle, which holds the arm steady upon the edge of the tooth (left central).

The lateral was elevated by drawing the two wire arms toward each other by the little screw, which projected through a smooth bore nut soldered upon the upper arm; thence into a threaded nut soldered to the lower one, as shown in the figure.

This mechanism could easily have moved the tooth down to its proper place within two hours, but that would have been too

rapid for the best interest of the case. It was safely elevated in less than two days, however, and then it was held there by the same mechanism for several days, after which time it was replaced by another mechanism (see Fig. 19) consisting of a gold ferrule having soldered transversely to it a gold wire flattened at the ends and bent hook-like to catch upon the ends of the adjacent teeth.

After the case had been completed the retaining wire bow (Fig. 16) having become bent (by mastication of food) out of proper form, and finding that attempts at rebending it were likely to cause improper bearings upon some parts of the dental arch, it was taken off, and replaced by a detachable scollop wire-roof plate (similar to one represented in Fig. 25) that could be quickly removed should it become necessary to alter the bearings upon any of the teeth. This retainer was worn during the next stage.

Seventh Stage. All the teeth were now upon the esthetic curve, but the line between the centrals being at considerable dis-

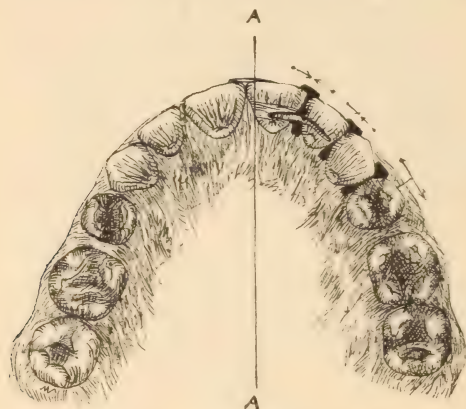


Fig. 20—The upper arch, showing the difference between the middle lines, also showing the first step in the operation (reduced scale).

tance to the right of the medial line of the face, it caused a "one-sidedness" of expression that was very noticeable, and therefore required to be corrected.

Between the first bicuspid and first molar on each side of the arch there was a slight space; these spaces were partly caused by the drifting of the side teeth after the anterior movement of the incisors, and the posterior movement of the cuspids and bicus-

pids. (See Fig. 20.) Such spaces are always liable to take place after the teeth are liberated from the corrective strain upon them. These spaces, however, had nothing to do with the cause of the one-sidedness of the central incisors. To make the line between these centrals correspond with the medial line of the face it was necessary to sway these teeth to the left about one-eighth of an inch. To accomplish this end and leave no space in front it was necessary to sway eight of the teeth from the right to the left along the esthetic line. The space between the left bicuspid and first molar fortunately furnished the opportunity to sway the teeth without the extraction of any.

In this stage it was important that the swaying should be performed without in any way disturbing the molars; in other words, the molars could not serve as anchorage to any corrective strain, though they might be used in retaining corrected teeth.



Fig. 21—The second step in swaying the teeth (A).

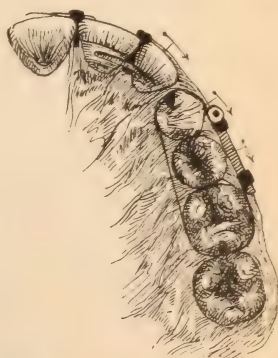


Fig. 22—The third step in the swaying process (A).

This part of the operation was performed entirely by wedges (made of pine wood) placed between the teeth anterior to the molars. The first step was to move the left first bicuspid back to the molars by forcing a wedge between it and the cuspid. At the same time this wedge was inserted, other wedges were placed into all the spaces between all other teeth that were not quite in contact. (See Fig. 20).

Having moved this bicuspid so that it was in contact with the molar it was held there by binding the two teeth together by a clamp band. (See Fig. 21).

After this was done the cuspid was also moved back by a

similar wedge placed between it and the lateral and held there by a larger band. (See Fig. 22).

The lateral was wedged back in the same way and then tied to the same band by a string (not shown in the figure). Thus one by one the eight teeth were moved to the left along the curved line of the arch leaving the centrals evenly placed upon each side of the medial line. When all these teeth had been moved there was left of course a wider space between the right bicuspid and the first molar than had previously existed. To prevent these swayed teeth from returning, they were packed "shoulder to shoulder" as it were, and then held there by a molar ferrule having a crutch-like wort soldered upon its anterior side that served as a block between these swayed teeth and the molar. This ferrule, which was cemented upon the molar, (see Fig. 23), was originally a cap, but to permit occlusion of the teeth, without grinding the molar shorter, the cusps of the cap were filed away, leaving only the parts that rested low in the sulci of the crown to remain out of the way of the antagonizing lower teeth.

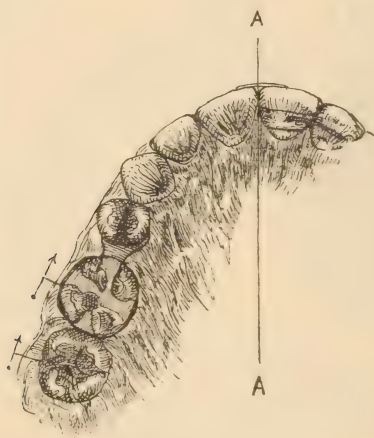


Fig. 23—The completion of the swaying operation and the application of the Wort-Ferrule Retainer.

It was the original intention to leave this wort band upon the molar indefinitely, but after several months had passed, the right cuspid and lateral were noticed to be moving outward from the "esthetic curve." Upon examination this change of position

proved to be the indirect result of a forward movement of the right molar teeth, caused by a peculiar antagonism with the lower

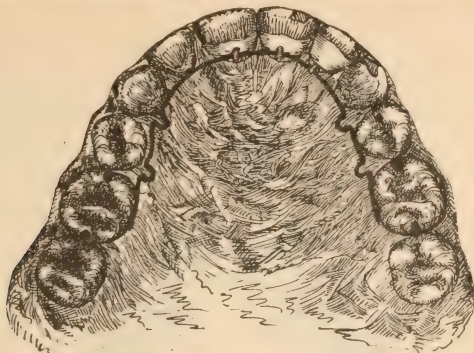


Fig. 24—The case completed and retained by a scollop wire bow (A).

teeth. There was no such action of the teeth on the other side of the mouth.

To immediately relieve the pressure upon the cuspid and lateral so that these teeth might fall back into line, the wort on the band was slightly reduced every week or two by passing a thin "sand paper wheel" between it and the bicuspid. As the cuspid and lateral gradually fell back into line, the molar continued to gradually move forward until in the course of a year the gold wort had been ground entirely away, as also the anterior part of the ferrule, leaving the two teeth in contact. After this had taken place the peculiar antagonizing points on the surface

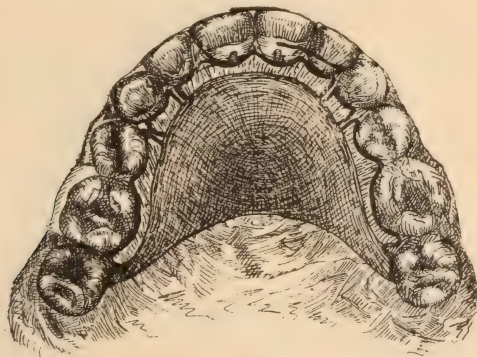


Fig. 25—Appearance of the completed case with the scollop wire retaining plate last worn (A).

of the molars were ground away so as to arrest further forward movement of the molars. All the teeth, with one exception, then remained as represented in Fig. 24.

The scollop wire retaining plate was now removed and a skeleton scollop wire retaining mechanism, (gold), consisting of a bow having two anchor ferrules, was cemented upon the teeth as shown in Fig. 24. When this had been worn for several months, it, like the other bow retainer, was found to be gradually bending

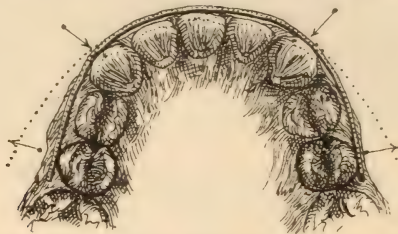


Fig. 26—Moving outward the lower bicuspids and inward the cuspids.

out of the proper form by the powerful mastication of food. To prevent injury and also to permit of easier adjustment of the retainer in case of future adverse changes (which did take place slightly), this retainer was removed and replaced by scollop wire plate formed similar to the one before mentioned.

This one (see Fig. 25) was worn about two years, when it was permanently discarded. All the teeth then continued to remain in line excepting the right first bicuspid, which moved



Fig. 27—The lower dental arch completed and the retainer applied.

slightly inward. It was moved outward again by a double-arm ferrule and was retained by the same mechanism, cemented in place and worn for several months and then discarded; the tooth ever after remained in line.

Eighth Stage. During the latter part of the operation upon the upper teeth, an operation was going on upon the lower dental arch, for moving outward the slightly instanding second bicuspid and inward the outstanding cuspids.

The regulating mechanism used, consisted of a simple stiff gold wire bow, anchored by two ferrules, soldered to its extremities, as represented in Fig. 26; the arrows in the figure show the direction of forces caused by the mechanism. This part of the operation was simple, and the teeth were easily brought into line. When all the lower teeth were corrected they were held in place by three arm ferrules, formed and arranged upon the teeth, as illustrated in Fig. 27.



Fig. 28.

Fig. 28 represents the entire case as it appeared two years after the completion of the operation.

Adaptation of Fillings to Conditions of the Teeth, Together with Electrical Disturbances Caused by Gold, Tin and Amalgam Fillings.

BY S. B. PALMER, M.D.S., SYRACUSE, N. Y.

EVERY experienced operator understands that approximate fillings of gold, amalgam, tin, or combinations of the same, cause electrical disturbance when conditions are favorable. Just what the conditions must be, and what remedies to use, to prevent the currents thus generated, has been a perplexing study. We offer the following conclusions as a result of observations, in hopes that they may assist young practitioners:

The two subjects mentioned at the heading, are so blended, that we will treat them together as one. It will be impossible to cover the whole ground in detail; we will, however, touch upon the most prominent points. Let us divide the teeth into two grades. 1st. Those which will be understood as of normal structure or above, including the teeth which by age have done receiving support from the pulp; also, pulpless teeth. 2d. Immature teeth, and others of any age where the tubes of the dentine are large; or, in other words, where the dentine is sensitive, which is evidence that the pulp is in sympathy with the sensitive surfaces; also that the dentine is a conductor of thermal changes, which changes under the laws governing organic bodies, are, or correspond with physical galvanic currents with which we are familiar, in electricity generated by battery action. That is, organic vital organs or portions of the body are acted upon by vital currents or by changes of temperature, particularly heat, which in animal life, is a phase of electricity. Having classified the teeth, for the sake of clearness, we will consider the first.

Teeth fully matured, and those which have past the stage of sensibility, teeth in this condition are not influenced by constitutional changes, or pulp action. This class embraces a large portion of teeth that require filling, the characteristics of which, have been so ably set forth in the articles in the *Cosmos*, by Dr. Black, that no more need be said than to repeat his remarks or conclusions relating to teeth of this particular class:

“The objects to be obtained in filling teeth are the perfect

exclusion of the causes of caries from the tissues, by sealing the cavity and securing such form as will prevent lodgments of debris about the margins of the filling, and thus prevent the further action of the cause of caries."

I am not reviewing the conclusions of Dr. Black. The first principle to bear in mind is that an immature tooth is a thing of life, an undeveloped organ of the body, and that any interference of the natural process for completion of the tooth, renders it abnormal. Early devitalization of the pulp leaves the tubuli enlarged and occasionally a large opening at the apex of the roots. This class of teeth comes under the first division.

In treating of the second-class we are at a disadvantage. It has been truly said that we "cannot demonstrate our theory before a convention." We are working on a plane above that upon which practice is established, and thus far has been demonstrated with instruments, but instruments and chemicals only give light on the physical characteristics of the teeth. In our early studies we used the galvanometer successfully in determining currents in the mouth between gold fillings and those of base metals. The galvanometer has not been consulted in any of the late observations. We are not in possession of books to help above the vegetable plane, because such knowledge can only be obtained by the observations of a practicing dentist. I regret to say that the best authorities have discouraged rather than helped investigation upon this vital plane until "in the fullness of time" practice has adopted the principles and operators desire a scientific backing for the facts.

Practically, when in the preparation of a cavity the instrument produces pain, we should consider that the pulp has not done its complete work upon the dentine, and we should also remember that nature's plans are being interfered with. The cut of a sharp excavator should, like a probe, convey to the operator the condition of the dentine. And here let me say to young practitioners that when a metal filling is packed against sensitive dentine which, as is often the case, in a short time the sensitiveness ceases and that portion of the dentine in immediate contact with the filling, has been devitalized. This may occur in dentine of the firmest structure, no harm being done because the devitalized lining becomes an insulator or non-conductor, in which case, the functions of the pulp are not disturbed. This, in a gen-

eral way, applies to normal teeth, which may receive gold fillings without cavity linings.

On the other extreme, should we find in excavating immature teeth, the dentine so soft as to be cut into shavings without giving the sound and feel as though the instrument is cutting bone when a metal filling is placed in contact, the same action takes place, as already described, but the devitalized lining, owing to its lack of mineral or non-conducting element, does not protect the pulp.

The fluid in the tubuli acts as a conductor of the thermal changes and the natural functions of the pulp is destroyed. It is in a way insisting that animals shall live on minerals. It is said that some operators have possessed sufficient skill that they could preserve teeth with gold regardless of compatibility. Let us not question the skill of any who cannot answer for themselves. We believe there are none now operating who possess the skill to suspend natural laws.

The practical point is this, and the remedy is simple: When the dentine is below normal, that is, when it is in a condition to be farther calcified, line the cavity with some material that will be insoluble, not a thick lining which will expose the edges to wear.

In preparation it is best to dry the cavity well so that the material will penetrate. When a cavity is thus treated, which was sensitive before, the surface becomes sealed and moisture does not return to come in contact with the filling, there will be no return of sensitiveness, and the dentine will improve as if there had been no decay.

During twenty-one years this theory has undergone evolution, as well as other sciences. At first dependence was placed upon the metallic salts to fill the dentine as we now recommend balsom, etc. This applied to back teeth.

There is a limit to this agent, which it may be well to mention. When the dentine is very soft, as we find where old amalgam fillings have fallen out, or in vital teeth also soft, some heavy lining like oxyphosphate mixed thinner even than for setting crown, will answer better.

Since lining cavities, I have discarded all copper from alloy. Teeth filled with amalgam without copper, with the cavity lined, remain bright upon grinding surface, and when such fillings

are removed to be replaced with gold, the dentine or enamel is not discolored. What has already been said will aid materially in locating fillings to prevent electrical action.

A few suggestions may assist young operators when occasion requires that amalgam and gold should come in contact or in close proximity. When gold and amalgam or other metal filling is placed in the same tooth, no harm will arise when the cavities are on opposite sides of the tooth, and even cavities may be filled upon the coronal surface with different metals, provided the enamel border is strong between and the separation some distance. Should the cavities be large, or so located that the two metals would be within the distance of eighteen or twenty, plate gage, cut away the separating wall and make a bold connection; for this reason, the nearer the plates the less resistance and stronger the current. Thus the intervening portion is likely to be decomposed; when the two fillings are in contact there is no current to leave the metals, and there is never a separation between gold and amalgam, as we often find between amalgam fillings in perfect contact. In the case of the gold and amalgam, the soldering at the union contains gold which enters into the amalgam and thus that union, however thin it may be, is finer than the amalgam plug throughout, consequently there can be no separation, while on the other hand with the amalgam filling, the union contains more mercury than the plugs on either side, and the joint becomes the positive element to be dissolved.

A remedy consists in placing one thickness of gold foil in the joint. This is lost sight of by amalgamation, but the fineness remains to raise the potential above the amalgam, so there is no separation. One case of approximate fillings will illustrate the principle for treatment to prevent galvanic currents. The most frequent annoyances occur when cavities are filled between bicuspids or molars in teeth with sensitive dentine. The saliva and remnants of food becomes decomposed, the current arising therefrom forms a current through the dentine and pulps. We formerly were obliged to remove one of the fillings. This may be obviated by lining the cavity with an insulator, as already mentioned. The effect is this: the drying of the cavity destroys sensitiveness, to the depth of the surface deprived of moisture; when the surface so dried is filled with varnish, paraffine, etc., neither moisture nor sensitiveness returns. This furnishes a more durable insulator

than chloropercha, which does not penetrate far into the dentine. Besides, chloropercha linings expand and remain flexible, and in some instances by hard biting upon the plugs, the fluid in the dental tubes is made to feel the pressure or convey sensation to the pulp. Linings need not be as thick as some might imagine. If the cavity is well dried any of the resinous varnishes will penetrate sufficiently deep to prevent moisture from returning to the plug. In no case nor with any lining should the varnish occupy the space between the filling and the enamel border so as to be worn away and admit moisture. Besides, it is difficult to build out or contour gold upon varnished enamel. Gutta-percha fillings do not need a lining to prevent thermal changes, but a varnish lining improves a gutta-percha filling as much as any other material. When balsam is applied the warm filling renders it very thin; a portion enters the dentine and the rest forms a compound with the filling; each piece remains fixed, and when once packed, the filling never leaks or separates from the walls until scraped away with an excavator.

We close with a few sentences in explanation of the differences which provoke discussion at the present time.

Scientists lose sight of the continuity of the laws which govern matter in minerals and in the vegetable kingdom. In the animal kingdom, both the matter and the currents have undergone change, so that the former is acted upon by the latter, the same as electric currents act upon mineral on the physical plane. We have stated that vital currents of electricity act upon organic matter. Also that heat, which is a phase of electricity, acts more readily upon matter in the animal kingdom than heat does on the mineral plane.

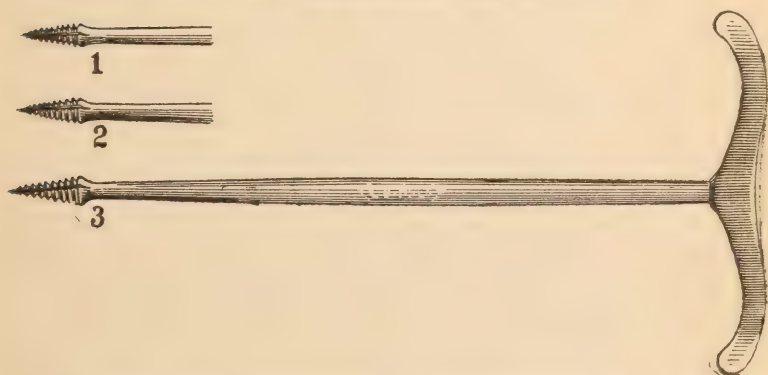
We have the positive and negative currents symbolized in animals. Heat or warmth, is life; cold, is death. Nature works best at a normal temperature of the blood; extremes overcome the natural designs of the pulp and retard natural developments. Of course this is a new doctrine and it cannot be demonstrated by tables or figures which are introduced as proof in physics. One thing should be remembered: The good in theories, after undergoing the refining process of clinical observation, become crystallized into *facts*. Practice has recognized this, and with this endorsement, mere denials or demand for like tables and figures to refute physical proofs, will not hinder progress upon the vital plane.

The writer does not invite controversy upon these points. The aim is to establish principles which young and inexperienced operators may rely upon and thereby save time and losses in gaining such knowledge by years of practice.

Operative dentistry is a science notwithstanding the vital principles of progress are denied. The knowledge which has been gained from clinical observations seem to harmonize with the electro chemical theory. With this union, there is strength, sufficient to place operative dentistry upon a scientific foundation upon the vital plane.

Improved Root Extractor.

BY W. H. WHITSLAR, M.D., D.D.S., CLEVELAND.



THE instrument illustrated is an improvement of the Morrison Screw-Porte for extracting roots of teeth that, are often submerged by gum tissue, without resorting to the use of the forceps. It is intended for small roots, but larger sizes can be made, and its usefulness is appreciated by all who use the screw-porte; often saving much laceration of the gums.

The improvement consists merely in having a small but firm handle into which the shank is screwed and then firmly riveted.

Is It Justice ?

BY A. B. CRAWFORD, D.D.S., GRAND RAPIDS, WIS.

SOME six or seven years since a prominent local druggist said to me, "You dentists want to beware, or like ourselves, you will have more law than you want, and it will be constantly jumping up to pester you."

Is it not a fact that we have gone already, farther than justice would prompt? No doubt we have been honest in our endeavor to elevate the profession by requiring all new men who come into it to take a good collegiate course, but how about the many good men we have throughout the country who never saw the inside of a dental college, but still are real ornaments to our profession. They have worked hard and studied hard, and as near as is possible, they fill the full measure of good and successful dentists. Many of these men have been in practice longer than the lives of many of our recent graduates, and still with all their knowledge and skill, there are several States of this Union where it would not be lawful for them to practice, and there are several States where, in order for them to practice, they must pass a searching examining board and give acceptable answers on subjects with which they have not been called upon to familiarize themselves. Is not that going a little too far? Is it justice to those men? Would such a law stand before the Supreme Court of the United States? Is it not a fact, that in justice to all concerned, a man who is competent to practice dentistry or medicine or to do anything requiring skill, in one State of this Union should also be just as competent to do the same in any other State of the same Union? Would it lower our standard if the National Board of Dental Examiners should recommend to all State Boards, that one who has practiced dentistry, say for ten years, should be accepted and allowed to practice where he pleases, subject of course, to proper registration? Does any one believe for one moment that such action by State Boards would increase the number of quacks and shysters? Is it not a fact that the latter pest are generally graduates and can go where *they* please? Is it not a fact that very many reputable graduates see this matter in much the same light as I do? Let us all unite in a call for such legislation as will do absolute justice to the profession and the public.

The Treatment of Oral Acidity, Local and Systemic.*

BY A. M. SCOTT, NEW YORK.

THE various conditions existing in the mouth, as the result of acid oral secretions and excessively sensitive teeth, with or without cavities, erosion of the enamel, recession of the gums, etc., I have described and the usual treatment with various alkaline agents, chalk, calcined magnesia, bicarbonate of soda, lime water, etc., commented upon and their objectionable features pointed out, as their transient neutralizing action, their gritty, irritating and insoluble nature and unpleasant taste, the one agent free from all objectionable features, and possessing all the desirable virtues, being that form of magnesium hydrate known as Phillips' Milk of Magnesia.

*Digest of paper read at Southern Society, November, 1895.

Dental Societies.*

BY DR. W. H. STEELE, FOREST CITY, I.A.

ISOLATION dulls the ambition and intellect, makes one selfish, narrow-minded and cynical; while association stimulates ambition, develops the intellect and makes one bright and companionable. This is just as true of the professional as the social or educational side of life.

Before the day of dental societies the members of our profession were much nearer on a line of equality in professional attainments than they are to-day, and that standard was far below what it now is.

In those days, if some bright member of the profession made a discovery for improvement of any kind, he kept it a secret and locked his laboratory door against his inquiring brother dentist; and were it not for dental associations, we would still be sailing along in that same old rut.

To learn what dental societies have done for our profession,

*President's address Northern Iowa Dental Society, Clear Lake, September, 1895.

it is only necessary to go back a few years and look up the records of society work.

At the time of the organization of the old Mississippi Valley Dental Society, in the year 1844, dentistry was a sad mixture of several different callings; the barber, jeweler, physician and dentist, all having a hand in it. There was no dental college, no dental literature, no dental engine, no rubber dam, no automatic or electric plugger, no cohesive gold, no electrical engine or electrical appliances of any kind.

What a change between then and now. All these advantages and improvements, and many more that might be mentioned, have come to us either directly or indirectly through the influence and stimulus of the dental society.

To the young man, who is just entering upon practice, the benefits to be derived from dental association meetings, are of inestimable value, as a means of inciting their ambition and spurring them on to greater undertakings.

As an illustration, some prominent member of the profession, who has made a special study of a pet hobby, successfully performs a difficult operation at the society clinic; some ambitious young dentist from a distance—though doubtful and indifferent before—is incited to greater efforts, with better results. Thus it happens, that through the influence of the society clinic, some very ordinary operators are in a few years found in the front ranks performing operations requiring the highest degree of skill; who, without the stimulus of the dental society, would have been content to plod along through life, occupying but an inferior position in their chosen profession.

It is impossible to estimate the good done by the society papers and clinics; for, it is not always the successful clinic and the good paper alone, that accomplish good results; but, oftentimes a poorly gotten up paper or blunderingly executed clinic, will be the means of throwing out a hint, which may find lodgment in some thinking brain, and, like seed sown in good ground, will accomplish great results. The one who receives the hint may have more inventive talent than the one who gave it, and if ambitious, he will not rest until the full solution of the problem is reached and success assured.

Very many of our best methods, appliances and instruments, have originated from hints thrown out in this way.

Take, for instance, the hot-air cavity drier. This indispensable little instrument was the outgrowth of an after-chat at a society meeting. A party of gentlemen were talking together after the morning clinic, when one of them remarked, "A small fortune awaits the one who invents an instrument for making cavities absolutely dry." One of his hearers remarked, "Why, that is easy, throw a current of hot air into the cavity, and when I go home I am going to make an instrument for the purpose." He did it, and that instrument was the origin of the valuable hot-air cavity drier of to day.

The idea of welding gold at a common temperature, the rubber dam, and hundreds of other valuable advanced steps, are recorded in our dental literature, that owe their existence to the dental society. I believe nine tenths of our improved methods and instruments have come from those members of the profession who could not afford to stay away from the dental society meetings.

At the meeting of our State Society, last May, there were only four or five members of the profession in attendance from the northern part of the State; and every one with whom I have talked about it, has replied: "I can't afford to go, it takes too much time and money."

Very many dentists imagine because they can fill their time with appointments, that would be spent in attending the meetings of their state or district societies, that it is economy for them to stay at home; but this is a very short-sighted way to look at it, as no live, progressive dentist can afford to ignore these grand opportunities of practical education.

If you wish to know who has raised our profession out of the old rut of fifty years ago and placed it high upon the topmost round of the ladder among the leading scientific professions, look over the transactions of the societies of the different states for the past half century and see if you do not find their names recorded there. If you would like to know who are the leaders of the profession to-day in the different states, look over the transactions of the state societies for the past year, and you will find there recorded the names of the men who lead the profession in their respective states. If you think it necessary to economize do it somewhere else; pay less for livery hire, smoke fewer cigars and give up the club, but *do not give up the society meetings*: for, in

justice to yourself, your patients and the profession you represent, you cannot afford to miss a single meeting of your district or state society.

If you are not already a member of some society identify yourself with one at the earliest opportunity, induce others to go with you, take an active part in the society work, and take my word for it, you will learn to love the work, will enjoy meeting old friends from year to year and exchanging ideas with them, on the latest methods, modes and instruments; and after enjoying the social and educational advantages of the society meetings for a few years, you will not miss a meeting unless compelled to do so by unavoidable circumstances.

Incident in Office Practice.*

BY W. E. WALKER, D.D.S., PASS CHRISTIAN, MISS.

THE patient was a young girl of fifteen years of age, who had never been to a dentist but once before, having had eight cavities filled some eighteen months earlier; some with gold and some with cement. She presented in the summer of 1895, when I found secondary decay around two of the gold fillings and forty-seven new cavities. None of them were deep, but presenting all the characteristics of rapid white decay, with the teeth very sensitive. During the past winter she had been confined in a New Orleans boarding school, having previous to that time lived a healthy free life in a sea-shore town.

I was at a loss to understand the cause of such rapid destruction of the teeth. During the winter of boarding-school life there had, of course, been more mental activity with her outdoor exercises than she had been accustomed to. There had been no "midnight suppers," but she stated that the time allowed for preparation for retiring was so short that she could never brush her teeth at night. The 49 cavities were filled with gutta-percha and oxyphosphate, and the use of milk of magnesia prescribed.

DISCUSSION.

Dr. S. C. G. Watkins thought that mental strain was proba-

* Presented at Southern Dental Society Atlanta, Nov., 1895.

bly one of the remote causes in such cases. He spoke of Dr. G. H. Winkler's recent article on the use of *Creosotum*, as having remarkably beneficial effects in similar cases, as when the gums are hypersensitive, the saliva ropy, etc.

Dr. B. B. Smith, of Florida, spoke of the rapid decay of the teeth of persons coming to Florida from remote States—Maine, California, etc.—a fact that cannot be disputed, though the cause is obscure.

Dr. C. L. Boyd spoke of the same effects as reported, following removal to New Orleans. Diet would be selected the same everywhere, but there must be same local cause for these effects.

The Contents of the Dentinal Tubuli.*

BY DR. S. H. BOOZER, ATLANTA, GA.

A MAN who has strong convictions and strong will power is in danger, in using the microscope, of seeing just what his convictions have already taught him to expect to find. Take the *illustrations* of what two men of opposing views *see* in a given specimen—taken separately they appear unanswerable; studied together they are a sorely trying muddle-producing confusion and discouragement.

As to the result of a comparative study of the work of the masters in histology and morphology, the tubuli are filled with a highly attenuative pabulum, or prepared tooth food, furnishing the elements, through the aid of which the teeth continue to harden through life; containing the lime salts for calcification, organic material or cement, and fibrinogen, which at death becomes fibrin filling the tubuli and forming the barrier claimed to be formed by coagulants. When a filling of amalgam is introduced over the open ends of tubuli, it disorganizes the fluid contents; the odontoblast becomes aware of the irritant and sends out its diastase, a powerful solvent which oxidizes the filling, and again dissolving the oxides, extending into the tubuli until the cell either dies or changes its mode of attack by again sending out food and allowing it to coagulate and calcify.

* Abstract of paper read at Southern Dental Society, Nov., 1895.

Of the recalcification of decalcified teeth he says: Dr. Black tells us that the odontoblasts never lose their embryonal nature but retain the features of a formative cell. When the food is defective in lime salts, or is not assimilated, the teeth seem to lose much of their calcareous salts. At times even, nearly all the dentine is absorbed, the pulps becoming unusually large. When the diastase is excessive in quantity it may attack the teeth themselves, as they do not possess the vital principle of the membranous tissues that resist the solvent process. When the solvent, or diastase becomes thoroughly impregnated with the salts taken from the teeth it may be absorbed from the odontoblasts by osmotic action and carried to other portions of the body. When health is restored this diastase is used up in preparing the food supply for the teeth, its normal function being removed and the teeth recalcified. Immediately after the death of the pulp the tubuli are filled with aseptic matter—lime salts, cement and organic matrix constituents. As the moisture dries out, only a harmless aseptic deposit is left, any remedy having a great affinity for water being contradicted. On the other hand, when the root is full of decomposing matter, as the moisture dries out from the tubuli, septic matter will be drawn in and the tooth become discolored, hence it is necessary to use those agents having the greatest penetrating powers. If the filling is thoroughly sealed all around its margins, any vacant space at the mouths of the tubuli, if the filling is non-irritant, will be filled by the fluids from the tubuli, which will coagulate and solidify; this is especially true of disinfected decalcified dentine left in the cavity. If, however, the filling is an irritant the fluid becomes a solvent, softening the tissue and carrying it away until the surface is reached, the odontoblasts are always ready to manufacture and supply all demands, pushing new formed material into the tubuli, except under conditions when the cell is overworked and dies.

Adjustable Bridge Plate-work.*

BY A. S. CONDIT, D.D.S., FINDLAY, O.

I WILL not dwell on the methods of which every experienced workman has had ample opportunity to test the good and bad qualities, but will confine my paper to the advantages of the adjustable bridge plate-work.

It is claimed by some members of our profession that a higher grade of skill is required to make removable than the fixed work. I differ from this assertion; it might be so if we had no fixed rule to work by. I have adopted a plan that is applicable to every case in which this method is adapted. The attachments are uniform in size and will need no change, except in length. In places where the teeth attached to are long, the device may be used full length, but in short bites it is necessary to shorten the attachment, to correspond with the articulation. By the use of an instrument named the Guide, it is possible to set the tubes absolutely perpendicular and parallel with each other, so that the piece of work may be adjusted easily and without friction. One who is competent to properly fit a tooth with a crown or band, will certainly have no trouble, especially after once seeing a piece made. The restoration of the lost form occasioned by absorption is very important. The lady for whom I inserted my second piece of work, by this method, had formerly worn bridge-work, and her first utterance, after the new work was inserted, was: "Why, doctor, that feels much better than the bridge-work, as it fills up that space under the teeth."

Artificial dentures should so closely resemble nature, in form and appearance, as not to be noticed as artificial. I have in mind a number of cases of bridge-work where the bite was short, and wishing to make a good articulating surface of the molars and bicusps, the wearers have never become accustomed to the sharp edge of the bridge teeth. In an article in the August *Review*, I referred to the rigidity of permanently fixed work, being so unlike that elastic condition which is so characteristic of the natural teeth, and I feel quite well satisfied that if the strain in mastication was equally divided between the teeth attached to

*Abstract of a Paper read at Ohio State Dental Society, Dec., 1895.

and the gums, a much better result would be attained. Having worn two short spans of fixed work for a number of years, I can assure you that I have always been conscious that the natural teeth were doing the work, and I am fully satisfied that if the gums were to assist in offering resistance to mastication, I would be much less conscious of their artificiality. I consider it an ideal class of work and that which is most conducive to our comfort and health, and its utility to be that in which the abutments, to which connection is made, are so perfectly sealed up that they are thoroughly protected from attrition by the attachment and substitute.

2nd. Work that can be easily adjusted and removed by the wearer, for cleansing and repair, and yet held sufficiently firm in place to support the natural teeth attached to and not to be changed from position in cutting and masticating.

3rd. Work that will offer the greatest amount of resistance without injury to the parts attached to, viz., the gums and teeth.

4th. In equally dividing up the strain or resistance in mastication, between the teeth attached to and the gums.

One word in reference to the attachment. I have considered its size and strength, in proportion to the work required of it, in order that it may be applicable to the greatest number of cases. Its strength will be found sufficient for any case, and yet it is not so large as to be in the way of the tongue or teeth, if properly adjusted. I have recently made an improvement in the attachment,* using the clasp gold tube, opened one side, which is fastened to the crown or band and permanently fixing the pin to the cap.

It may not be out of place to mention a few of the cases I consider this work especially applicable for.

The lower incisors, especially where the remaining cuspids lean toward the space as they usually do, making it quite difficult to insert a fixed bridge, and if a plate were used and all its weight were allowed to rest upon the gums the work would soon settle down sufficiently to present an unsightly appearance.

The lower bicusps and molars, with none but the six front teeth remaining. I would recommend the banding or crowning of the cuspids, placing the attachments on both and coupling the

*The original attachment and method were fully illustrated in THE OHIO DENTAL JOURNAL May, 1895.

plate together back of the front teeth; the same as would be done if no attachments were used. If you were to ask, why use the attachments at all? I would answer, if the gums were very flat, as they usually are, it would be to hold the work firmly in place; also, to relieve the gums from undue pressure, and besides the bands or crowns would protect the teeth from the attrition caused by the plate.

A full lower attached to the molars.

Also the molars on either side, with but one attachment. Much has been said about saddle bridges, where but one attachment has been used, some saying much in its favor. Dr. Peterson, of Iowa, says that he has worn a piece for nine years. The advantages arising from using this attachment in this kind of a case are obvious. The work is easily made, is easily adjusted, and is held sufficiently firm in position to be kept from moving or rotating during the work of mastication. If the attachment could not be used in any other place, its value could not be estimated in this.

The upper four or six front teeth.

Also the bicusps and molars above, or a case as represented in Fig. 3, of OHIO DENTAL JOURNAL, of May, 1895, attaching to the molar on one side and cuspid on the opposite, connected by a narrow strip of plate.

There is a limit to fixed work, but not so to the adjustable plate, as in almost every case where we have a pier on each side of the mouth the work can be used.

Clinics of the Southern Dental Association.

WEDNESDAY and Thursday mornings were devoted exclusively to clinics, among which were the following:

Dr. W. H. Richards (Knoxville, Tenn.,) demonstrated his method of loading rubber plates with fusible alloy, prolonging the usefulness of temporary plates. By this method, soft wax is placed on the gum side of the plate which is put in the mouth and pressed to place until the proper articulation is obtained. Models are then made, the plate with the wax being imbedded in plaster. When the wax is removed the space it occupied is

filled with fusible alloy, a dovetailed groove having been previously cut in the plate. The usefulness of a plate under which partial absorption has taken place, may thus be prolonged until the mouth is ready for the permanent plate.

Dr. W. T. Arrington (Memphis, Tenn.,) made a clinic with Abbey's soft gold and tin-foil folded in ribbons with alternate layers of gold and tin, the ribbon being folded into the cavity, and the filling finished with annealed Abbey's foil under mallet pressure and polished up in the usual way.

Dr. L. E. Custer (Dayton, Ohio,) fused porcelain in his electric oven, and demonstrated the appliances for the automatic regulation of the current. This oven does away with odor, noise and gas and does not heat the room.

Dr. L. G. Noel (Nashville, Tenn.,) had a series of clinics with children on almost every variety of dental diseases incident to childhood, the treatment being directed chiefly to oral hygiene: demonstrating also the method of using tincture of iodine for loosening green stains on the teeth, destroying the microbe organisms and reducing gingival inflammation; also arresting decay by the use of silver nitrate, using the powdered crystals, and the use of copper amalgam in small approximal cavities. For this purpose the silver nitrate should be used and repeated until the cavities are thoroughly blackened before they are excavated for the insertion of copper amalgam.

Dr. M. C. Marshall (St. Louis, Mo.,) presented a new feature in bridgework, by which porcelain molar teeth are used, avoiding the unsightly display of gold crowns and by his method obviating the danger of fracturing the teeth which are not exposed to heat by this method. The bridge consists of a gold box frame so constructed as to grasp the teeth firmly so that they cannot be pressed out. They are set with melted sulphur, a broken porcelain to be replaced while the bridge is in the mouth, being set with oxyphosphate cement.

Dr. P. W. Onderdonk (New York) presented a method of attaching Logan crowns by means of a gutta-percha washer, the end of the root being smeared with a varnish composed of rosin and chloroform.

Dr. E. P. Beadles (Danville, Va.,) demonstrated his style of operating always in a perfectly erect position, using mouth mirrors. His operation was a combination filling of cohesive and • non-cohesive gold in a central incisor.

Northern Iowa Dental Society.*

THE first annual meeting of the Northern Iowa Dental Society, was held at Clear Lake, September 3 4-5, 1895. The profession of the northern half of the State was well represented, besides a good attendance of visitors from outside. The meeting was full of life, interesting and profitable. The papers were all practical and called out good discussions. The clinics were highly instructive, especially those given by Dr. Angle, Minneapolis; Dr. Peterson, Dubuque; Dr. Ferris, Waterloo, and Dr. Knapp, Charles City.

Too many young men in the profession look on attending these meetings, as time lost and money spent for a luxury, when in reality, they are an absolute necessity, and no one can afford to miss them.

The following extract from the report of the Executive Committee will give an idea of the object and intentions of this new society :

"We shall to-day organize a new society for the purpose of furthering the interests of dentistry and of giving the dentists in Northern Iowa an opportunity of interchanging ideas.

"The need of more society work in our state is made manifest when we note the small proportion of the entire number of dentists in attendance at our state society meetings. Our reason for this, undoubtedly, is because our state is so large that the place of meeting each year gives quite a number an excuse for non-attendance.

"Every dentist in the state should become a member of some society and would be benefitted by so doing. The dental profession has made wonderful strides in the last fifty years, and why? Because the leaders have been persistent, earnest workers, who have organized dental societies, built colleges and caused to be enacted laws regulating the practice of dentistry.

"The demand for higher dental education has been a means of establishing many colleges and societies in our land.

"A number of us think the need of a society in northern Iowa is evident and hope the new organization will turn a few

*The papers of this society will be published in the OHIO DENTAL JOURNAL.

more of us into the proper channel—that of professional growth and progression.

“If each one here does his duty we shall not fail in our undertaking. We are in the profession for a life-work, and no task should be too hard, no work too laborious, when it will in any way help upbuild dentistry.”

ALL SORTS.

The Röntgen Rays.

Everyone seems deeply interested in Prof. Röntgen's discovery. We herewith present extracts from various sources regarding this subject. From the *Literary Digest* we extract the following :



Picture of Human Hand taken by means
of the Röntgen X-rays.

“The clearest account of the discovery is given in a letter to *Science* by Prof. Münsterberg of Harvard, writing from Freiberg, Germany. He says :

"It is well known that the discharges of a large Ruhmkorff induction coil produce in a vacuum tube, such as Crookes' or Hittorf's, colored rays which go in straight lines from the cathode to the glass of the tube. These cathode rays, which have been much studied, are visible to the eye and are well characterized by the fact that the magnet changes their direction; they do not pass thick cardboard, wood, etc. The place where these cathode rays reach the glass of the tube is the center of Röntgen's X-rays. They are not visible and are not turned aside by a magnet; in short, they are not cathode rays, but are produced by them. If in a dark room we cover the tube by thin, black cardboard, nothing can be seen at all, even if we bring the eye in the direct neighborhood of the tube during the electric discharges. But if we now bring a card covered with barium platino-cyanid near it, the paper flashes up with every discharge, and this fluorescent effect is visible even if the paper is distant two meters from the tube, and it does not matter whether the varnished or the other side of the paper is directed toward the tube. The X-rays thus go through the black cardboard which is opaque to sunlight, and the same effect follows when a bound volume of a thousand printed pages is put between the tube and the fluorescent paper. . . . The rays produce an effect upon photographic dry plates, which, of course, remain and allow us to control the subjective comparisons. Both (these) methods show that wood is not much less pervious than paper; boards 3 cm. thick absorb very little. Hard rubber disks several centimeters thick do not stop the rays, and even aluminum plates 15 mm. thick do not make the fluorescence entirely disappear. Glass plates vary with the lead in them, those containing lead being less pervious. Platinum is slightly pervious, if the plate is not thicker than 0.2 mm., silver and copper can be a little thicker; lead plates 1.5 mm. thick are no longer pervious. All substances become less pervious with increasing thickness, a fact which is nicely demonstrated by photographs taken through tinfoils, of gradually increasing number. The perviousness of substances of equal thickness seems chiefly dependent on the density. . . .

"Prisms and lenses do not diffract the rays, nor do prisms of hard rubber or aluminum. . . . Objects with rough surface let it pass exactly like polished ones. The shadow of a round stick is in the middle darker than at the edges: the shadow of a metal tube is in the middle lighter than at the edges.

"With regard to the effect on photographic plates, it must not be forgotten that lenses do not retract the rays and therefore ordinary photography is not possible; the pictures of the objects are only shadows. But these shadow-pictures can be taken in the closed wooden box of the camera in a light room, as the sunlight of course does not pass through

the wood while the X-rays do. In this way Röntgen took photographs of a set of metal weights in a wooden box and of a thick wire wound as a spiral around a wooden stick; the wood was pervious, the metal of that thickness not, and so the shadows of the weights and of the wire are seen in the photograph, those of the wood scarcely at all. In the same manner he took the picture of a compass-needle in the closed box. The door between two rooms did not hinder the chemical effect."

The following account of some of Prof. Wright's experiments is quoted from the *Engineering and Mining Journal*, February 1:

"It was evident at the outset that the order of transparency of different subjects for the light rays was very different from that which is found with the cathode rays. Thus pieces of glass were more opaque to these rays than some of the metals or than ebonite, which is perfectly opaque to luminous rays, but transmits the cathode rays with great freedom. Among the metals aluminum is especially distinguished, and in one of the experiments of Prof. Wright an aluminum medal left its impress on the plate so clearly as to show both the design and lettering. In this latter case the layer between the medal and the sensitive plate was absolutely opaque ebonite, which is the substance used by photographers to darken completely the plate-holder.

"In other experiments which were made by Prof. Wright with pine board interposed, a closed paper box containing aluminum grain weights left a trace upon the plate, which appeared as though the box were almost transparent and the weights themselves somewhat translucent. An ordinary lead-pencil lying near the box upon the interposed board showed its graphite core by a darker trace in the middle of the fainter impress of the wood of the pencil. . . . A number of American coins—silver, copper and nickel—produced strong impressions, showing almost complete interception of the rays, but there were differences, the copper coins transmitting more than the nickel and the nickel more than the silver."

In a communication from Prof. A. W. Goodspeed, appearing in the *Medical News* of February 15, he says:

"The Crookes' tube represents as complete a vacuum as it is possible to obtain, and is supposed to have an interior pressure of about one-millionth of an atmosphere. The negative electrode from which the X-rays start is an aluminum disc about a half-inch in diameter. With the apparatus at present used by the writer an exposure of an hour or more was allowed. An ordinary photographic camera is used, having an aluminum shutter, which remains closed. The sensitive plates are entirely enclosed in the photo-holder, which is placed about five inches from the end of the Crookes' tube, in a horizontal position on the table. The sub-

ject to be *radiographed* is placed on the cover of the plate-holder. The plates are developed and fixed in the usual manner. Radiograms to any extent may be printed upon any sensitized paper."

In the same issue of the *Medical News* Prof. H. W. Citell, says:

"The surgical imagination can pleasurably lose itself in devising endless applications of this wonderful process. If it becomes possible to drive these mysterious rays through the entire body as clearly as they now penetrate the hand, the realm of utility will be practically boundless. It is stated that stone in the kidney has already been determined, and the opacity of glass has led to the detection of small pieces adherent to bone after accident. The similar opacity of lead may render the probe useless in gunshot wounds, except in rare cases as when the bullet is buried in the bone. A new means of distinguishing luxations from fractures is now added to the long list at our command. Obstetricians will readily perceive the immense value of ability to *see* the fetus in utero after ossification of its bones has occurred. The representation of deformed pelvis in the living subject, of spondylolisthesis of calcareous infiltration of various parts, such as arteries, and of exostosis—all this opens up a tempting and promising field for practical research."

He then describes some of his own experiments. One showing small intestine containing mucus, fecal matter, a penny, and gall stone. All showed plainly. Another picture shows a number of pins in a piece of fresh cirrhotic liver one centimetre thick. A bullet and piece of glass in a hand preserved in alcohol. We are assured of many new developments in the near future.

The Effect of Oxidation on Cut Alloys for Dental Amalgam.

Dr. G. V. Black, has just completed a series of experiments, published in *Dental Cosmos*, to determine what effect oxidation on cut alloys has on the character of the amalgam filling and the working qualities of the material. In all experiments where freshly cut alloys made fillings that did not shrink, oxidized cuttings of same alloy invariably showed shrinkage in the filling. Where slight shrinkage was shown by freshly cut alloy, more shrinkage was produced by the same alloy when oxidized. Regarding this he says:—

"The oxidation of the cut alloy produces marked changes in the working qualities of the mass, which are best appreciated when the fresh and the oxidized material are mixed and used at the same sitting. The profession seems to have been captivated by alloys that work smoothly and softly without setting too quickly, and manufacturers have so tem-

pered their alloys as to meet the demand, neither party knowing that the resulting amalgam was caused to shrink. Freshly-cut alloys do not make smooth and soft-working masses, but, on the other hand, they are crisp and harsh, and set quickly. This is especially true if the alloy contains a sufficient percentage of silver to prevent shrinkage, or if small quantities of other metals are added to the silver and tin. From all that I have thus far seen it appears that we must give up smooth soft-working alloys if we are to have amalgams that do not shrink."

Electrical Osmosis for the Treatment of Living Dentine.

From a paper read before N. Y. Institute of Stomatology by Dr. H. W. Gillett, and printed in the Feb'y *International Journal* we make the following extracts:—

"Cocain solutions and the electric current applied to sensitive dentine, together, *do* completely anesthetize it; consequently the cocain is the active agent."

Cases:—Rubber dam applied, and twenty-five per cent. aqueous solution of cocain applied on cotton to a very sensitive bicuspid cavity of medium size. Positive platinum electrode applied to cotton, and negative sponge electrode to the cheek. Electric current passed for thirteen minutes, beginning with a voltage of three, and attaining a maximum of fourteen and a half, and a maximum quantity of about two-thirds of a milli. Result: absolute freedom from all sensation to the vigorous use of an excavator for removal of decay, and to the use of bur for forming ample retaining grooves in cervical and side walls. Sensitive buccal cavity in inferior third molar. A fifteen per-cent. aqueous solution of cocain. Current applied during eleven minutes, reaching a maximum of ten volts and about two-thirds of a milli. No diffuse pain, a very little in tooth. Result: a marked lessening of sensitiveness of whole cavity, and entire removal of it in a large part of cavity.

As a rule, this class of cavity requires longer applications than approximal cavities, and it is difficult sometimes to affect that part which is out of the path of the current.

Coronal cavity in left superior second molar. Quite sensitive. A twenty-five per cent. aqueous solution of cocain applied in this way, beginning with same voltage. After the first two or three minutes it was possible to increase the voltage much more rapidly, without undue pain, than was possible with the salt solution, this fact being seemingly due to

the beginning anesthetic effect of the cocain. At the end of eight minutes seventeen volts was being administered and with less pain. At the end of ten minutes there was no pain at all. The milliamperemeter recorded about three-fourths of a milli. When the current was suddenly cut off, there was much less of the "kink" noted by the patient,—another indication of deep cocain effect. Upon vigorous use of the excavator, using the same instrument as before and on the same place, the dentine was found *absolutely* free from all sensation. The effect of cocain in these applications does not seem to reach deeply into the dentine in most cases. By prolonging the application, however, the pulp itself, may in favorable cases be anesthetized even through a layer of dentine.

As to the effect upon the pulp or the tooth, I have examined some of the teeth where the first applications were made, and I am unable to find any trace whatever of a permanent change in their condition.

I always apply the rubber dam, as it is difficult, and often impossible, to prevent leakage of current through other tissues if this is not done.

Any metal fillings which will be in contact with the wet cotton in the cavity or with the electrode must be covered. The current from a metallic surface into dentine is irritating and painful. I find Gilbert's temporary stopping a very useful material for this purpose. Wax will also do. In cases where I am working on an approximal cavity in one tooth, and a filling in the next tooth is too close to allow of its satisfactory insulation, I apply the rubber at first only over the tooth to be worked upon, thus insulating it completely; or, if the rubber is already in place a second rubber may be applied over the tooth to be worked upon. The positive electrode should be of platinum, as most other metals are affected by the current, and are liable to stain the tooth.

These conditions being provided, see that your current is turned on. I always test this by touching the metal parts of the electrodes together, and watch the milliamperemeter to observe the result.

This selector is so arranged that when the needle is at zero, and contact of electrodes is made as described, about one milli will be recorded. Getting this result assures the operator that all connections have been made, and that the apparatus is ready. If, however, a larger quantity of current is indicated by the milliamperemeter, it shows that the rheostat contact is not at the right place. This same proceeding would also serve to detect any breakdown in the rheostat if it had occurred. Twenty seconds serve to assure the operator on these points, if his apparatus is conveniently placed. I then wet the negative sponge electrode with water or dilute salt solution. I place in the cavity a pellet of absorbent cotton saturated with a twenty to thirty per cent. cocain solution. I prefer not to have this cotton extend outside of the cavity, and to keep

the solution confined to the cavity as much as possible. This concentrates the current in the part I desire to affect.

The negative wet sponge electrode I usually allow the patient to hold most of the time. It is preferably to be applied about the face or neck, as near the tooth as is convenient. Having placed this and allowed the patient to take it, I apply the positive electrode to the cotton in the cavity, and begin slowly to increase the current by turning the large fibre knob of the rheostat head in the direction indicated by the needle which records voltage. The first consciousness of the current sometimes comes to the patient as the typical little "kick" or "kink" of the galvanic current, but it is a very small one with this selector. More often the patient is only conscious of an indefinite, gradually increasing pressure, and if the current is pushed too rapidly this may increase to pain. It is therefore necessary to watch the patient carefully, and to pause in the turning-on process as soon as the change in the eye of the patient indicates that he is beginning to feel the current to an uncomfortable degree.

Subjects differ very much in the amount of current they will bear without discomfort. It is usually found, however, that by very gradual increase, and by taking more time to reach the maximum in these sensitive cases, a sufficient amount may be applied, to any case, to attain the result of anesthetizing the dentine.

It is my customary habit, as soon as I have opened into a sensitive cavity, to make an application lasting from eight to twelve minutes. If I have reason to expect difficulty with the case, I make the application longer. If the first application is not sufficient for all I wish to do, I repeat it later.

Having reached a voltage likely to be sufficient, I allow it to stand at that point till the end of the application.

Fifteen to twenty volts will usually be attained in seven or eight minutes. In many cases, with small cavities and little sensitiveness to the current, twenty-five or thirty volts may be marked in the same time.

The higher voltage works more rapidly.

At the end of the application, I usually break connection at the negative electrode, as there is less often any shock in so doing. If the subject is very sensitive to the current, I turn the voltage down low before breaking connection.

Having concluded the application, I turn off the current in the selector by means of the switch. This lever may also be used for concluding the application of current if you find no objectionable shock resulting.

Then I test the cavity, and finding it all right proceed as usual,

bearing in mind that the effect may not have gone as deeply as I wish to go with my instruments, so it is still necessary to watch for signs of returning sensitiveness."

Guaiacol-Cocain Cataphoresis and Local Anesthesia.

The following extract is taken from a paper read by Dr. W. J. Morton before the First District Society of New York, and published in the *Dental Cosmos*:

"Electro-guaiacol-cocain anesthesia requires two-thirds less time and two-thirds less current than aqueous solutions of cocain used by the cataphoric method. The anesthesia produced is due both to guaiacol (in itself capable of producing local anesthesia) and to cocain, and is far more profound than cocain anesthesia alone.

The formula for the mixture is:

R_x—Guaiacol, 3 i ;

Cocain hydrochlorat, gr. v. M.

These quantities constitute a solution containing eight per cent. of cocain; solutions containing thirty-two per cent. can, if desired, be made.

Having already experimented with this new preparation on the skin and mucous membrane, I next employed it in producing anesthesia of sensitive dentine, and with perfect success, as evidenced by the following two cases:

Patient, Miss M. W., age eighteen, brought to my office by Dr. M. L. Rhein, and operations on the teeth by him.

Patient of extremest hyperesthetic state.

Experiment 1.—Deep crown cavity in second superior right molar, almost to the horns of the pulp of the buccal root. Very sensitive, especially as it approached the horn of the pulp.

Electro-guaiacol-cocain anesthesia, seven minutes in two applications.

Result, perfect anesthesia to hand excavation. Patient experienced no pain from the current.

Experiment 2.—First right superior bicuspid, posterior approximal and crown cavity. Had been attempted to prepare the tooth at a previous sitting, but on account of the extreme sensitiveness, work had been abandoned before the cavity had been entirely excavated; the bottom of the cavity was covered with asbestos paper, over which was packed a filling of gutta-percha.

On removal of the filling, after having been in place about six weeks, the tooth was found exquisitely sensitive to the slightest touch.

Electro-guaiacol-cocain anesthesia. The first approaches of the current (not noted on the milliamperemeter) gave severe pain, which grad-

ually subsided, and each subsequent increase of current caused pain. Three applications on cotton were made. After seven minutes of about one-tenth of one milliamper, I was able to carry the current up to two-thirds of a milliamper without pain.

Complete anesthesia.

On exploration, it was found that after the removal of a thin film of leathery dentine, the point of an excavator readily entered into the pulp-chamber without any consciousness of pain on the part of the patient. Completely successful.

No hyperesthesia of the tooth the next day."

Preparation of Cavity Margins.

From an article in the *Dental Review* on this subject, by Dr. E. B. Weeks, we abstract the following: "Thanks to Dr. Black and others we have now a system of definite laws as to the preparation of cavity margins and enamel margins, how much the walls should be cut away, how much the enamel should be beveled.

It is the belief of the writer that it is absolutely necessary to the stability of a filling that these laws be both understood and *carried out* in every cut of the chisel. It is also my observation that these laws are not carried out in the everyday practice of the rank and file of our profession. The first requirement is a knowledge of the minute anatomy of the teeth, and of the lines of cleavage of enamel. Then the first rule should be: Cut away all enamel margins not supported by sound dentine. The wish to keep a frail wall of enamel for a retaining wall must give way to the fact that it will not stand; therefore cut it away.

Second. If the line of the margin of the cavity brings you close to the line of demarcation between the lobes of the teeth, cut through to or beyond such line, for it will prove a source of weakness to your filling if you don't, because of the greater liability of the enamel to split along these lines.

Third. Cut away the margins of the cavity clear beyond the lines of contact on the teeth. Let nothing deter you from doing this, for if the line of union between the filling and the enamel is at or within the line of contact, recurrence of decay is almost certain sooner or later.

Again, carry the cavity margins cut to such a place on the surface of the tooth that the fillings may be smoothly polished and beautifully formed. Do not cut into a developmental groove and then stop short of the end of it.

Do not cut next to a groove or to another cavity and stop there, leaving a thin division of enamel between them, but cut it away.

Having formed the cavity margins on the lines indicated, it remains to bevel the enamel margins. The enamel should be shaved or planed down with sharp chisels to that line on which it splits or cleaves off most readily, then with enamel trimmers the margins of this enamel should be beveled *beyond* this line so that the ends of the enamel rods may be protected by the filling. It is impossible in a paper like this to demonstrate just what this bevel should be at each particular part of the tooth or cavity, but must be learned from close observation of the lines on which the enamel cleaves at each different portion of the tooth, and by following the teachings of Dr. Black, whose writings and admirable illustrations are open to each one of us, a heritage of vast value to us all.

Tube Teeth in Bridge-Work.

In an article in *Ash's Quarterly*, Dr. J. H. Spaulding says: "You are well aware that bridge-work, as most universally constructed even by our most skillful mechanics, presents two glaring defects, viz. :

1st. The danger of breaking off the porcelain faces of molars and bicuspid especially, and the difficulty—I might almost say impossibility—of proper repair in such event.

2nd. The hideousness in appearance of such bridges which show an almost unbroken surface of gold on the masticating and lingual aspects.

In the use of the English tube teeth I have succeeded in overcoming entirely both these defects.

Take, for instance, a first superior molar very badly decayed and requiring a crown; second bicuspid gone; first bicuspid root only remaining. This represents a simple bridge of one tooth, which can be extended as circumstances demand. After suitable preparation of the roots, make cap and pin for molar and bicuspid in the usual way, place these on the roots, take impression and make model. Next select tube molar and two tube bicuspid. Those which are to be attached to the caps and pins already prepared are ground to fit the cap, but concaved on the side presenting towards the space to be filled. Over this end of each tooth so ground burnish thin pure gold plate, pierce a hole and push through plate and tube platinum wire of a size to fill the tube. Remove tooth and fix with 23-carat solder. Replace tooth in position, burnish gold more carefully and trim off excess. For convenience in description we will call this the base. The tooth with its base is now placed in position on cap and held with wax, the tooth slipped off, and the base and cap united by the wax are invested for soldering. Boil out wax, and solder

with 20-carat solder. The tooth which forms the bridge, that is, fills the space between these two crowns of attachment, is ground so as to leave the very necessary self-cleansing space thus, the base made in the same manner as thus described. Now fill the concavity in this base with 20-carat solder. Next slip the teeth into place and adjust the bridge as desired, and wax all together. When this is done lift the bridge off the model, slip off the teeth and invest for final soldering. Please observe that at no time do you keep the tooth or teeth in place while soldering, which is a great advantage. Much less gold and solder are used than in the ordinary method, which is an economy of great importance, and almost none is presented to view when the bridge is in place.

The next step after polishing the gold part of your bridge is to attach the teeth, which can be done either with cement or with sulphur. In the latter case the bridge and teeth are warmed, and melted sulphur placed around the pin and base which receive the tooth. After a little practice this is very easy. You will have perceived, without my insisting, that the two great advantages which I claim for this manner of constructing bridge pieces are perfectly accomplished.

If at any subsequent time a tooth breaks, you have only to select another, grind it to fit and fix it with cement. Can any repair be more simple? But this is rarely necessary, as these tube teeth are very strong and do not readily break. I am using them exclusively for bicuspid crowns, and claim for them a more perfect adjustment to the surface of the root than can be had with any other tooth, besides simplicity in preparation.

I will try and briefly describe it. Your bicuspid root is ground even with the gum, or as nearly so as possible, or conveyed, if you prefer. They are often rendered very irregular by decay, so that you have a very uneven surface. Pure gold plate is burnished to this surface, and with the mallet and proper instruments made to enter all irregularities. A hole is punched in this plate and your pivot driven through into the canal previously prepared. Plate and pin are united with solder and the plate trimmed to correspond exactly with the size of the surface of the tooth. The tooth is ground, and the base made and soldered to the plate and pin exactly as described for the bridge.

I have been using tube teeth exclusively for most crowns and all bridges for about two years and a-half, and as it was an original idea with me, I have thought best to test it well before bringing it to the notice of my confrères. The conclusions are that they are very advantageous, because—

1st. They are the strongest teeth.

2nd. That either for plates or bridges they admit of easy repair in the rare cases where this is necessary.

3rd. They can be ground and polished according to the artistic demands of the case without injuring their appearance.

4th. They are very easily adjusted, and no soldering is done with the teeth in place.

5th. A great economy of gold and solder is made."

The Protection of the Cervical Border in Proximate Cavities.

In a paper read before the Hayden Dental Society, by Dr. Louis Ottofy, and published in the *Dental Review*, the writer states that cohesive gold is unsuitable for protecting the cervical border, on account of the state in which we get the gold and the manipulation which in that state it requires. He objects also to amalgam, but recommends the combination of tin and gold. One sheet of tin carefully folded within one sheet of No. 4 non-cohesive gold foil. Of this material he says;

"I well remember the difficulties I first met with in trying to use tin and gold, and I am satisfied that its use is abandoned by many because of a lack of persistence in overcoming these difficulties. In the first place the tin should be folded carefully within the gold, so that when it is cut up no tin is visible. In introducing it into the cavity, the pieces should be large enough to fit the floor or seat of the cavity, and not so large as to be crumpled up in their introduction. A very large plugger, coarsely serrated, is best adapted for condensation: the material should merely be pressed into place and not packed, in the sense in which gold is packed into a cavity. Care should be taken not to injure the gold and thus expose the tin, but have gold come in contact with gold as much as possible. Gradually pieces of non-cohesive gold should be added, followed by semi-cohesive and finally cohesive.

One of the advantages of tin and gold lies in the fact that it can be used under moisture; while it is not well to use any material under moisture, when the circumstances compel us to do so, I know of no material which can be worked as favorably as the combination of tin and gold.

Another advantage is that it does not require as close condensation as anything else we could use. I am not certain what reason is assigned for this, but probably the fact that the exposed tin oxidizes, and we have the material when porous, increased in quantity by the formation of this oxid, accounts for it. This oxidation, furthermore, is claimed to be of some therapeutic value. Whether that is true or not, anyone who has removed tin and gold, will have seldom found the surface formerly in contact with tin and gold attacked by caries.

This covers the subject of protecting the border on account of its vulnerable location. But aside from this, failure is also due to the difficulty of properly preparing and then reaching all parts of the prepared cavity. I cannot recall any more perplexing operation than that of faithfully following up the white or chalky lines, which adjoin the margins of proximal cavities proper. It is needless to say that half the battle is won when these chalky lines have been followed up and prepared, and the other half is won when they have been properly protected. Save tooth structure whenever you can, but cut fearlessly when trailing after chalk lines, is a good rule to observe.

Finally, the cervical border is never properly protected unless the final finishing of the filling or shaping of the tooth is accomplished on true mechanical and physiological principles. By the mechanical principles I mean that the seat of the cavity should be ample so as not to put too much strain on the border itself, for that requires protection, and a surface requiring protection is not usually fit to give support. By the physiological principles I mean the preservation of the normal interdental spaces, and this usually demands a restoration of the contour of the tooth, so as to secure as good a self-cleansing space as possible."

Gold Bandage as a Means of Saving Teeth.

From an article by Dr. J. F. Adams, read before New England and Conn. Valley societies and published in the *Dental Digest*, we abstract as follows:

"The bandage is designed to envelope the tooth, covering all those parts where decay is liable to occur, as well as those which have already been attacked, existing cavities having first been filled with oxyphosphate cement. It is thus prophylactic as well as remedial. Let us take for example a superior bicuspid, though the bandage may be used on any of the anterior teeth, and if the patient has a large mouth it might be applied to the first molar, but the bicuspids are the teeth for which it will oftenest be demanded. If the tooth be in close contact with its neighbors I first pass a No. 00 separating file between them, which makes just space enough to admit the bandage without any crowding of the teeth, and then introduce a wedge on either side and separate freely. When this is accomplished I slip a rubber ring over the tooth, allowing it to impinge slightly on the gum to force it away from the neck of the tooth. The ring is made from a short section of rubber tubing, which is trimmed at one end to an edge by placing it on a mandrel and pressing sand-paper against it while it is revolving in the hand-piece of the engine. Common,

cheap tubing is best for the purpose, as pure rubber is too soft for the sand-paper to act upon. Let me say here that this is not the only value these rings have. They may be applied in most cases to roots, preparatory to crown-setting, and will open up around the stump so that the operator can see what he is doing, while trimming it to receive the band or fitting the porcelain to it. They are worn with very slight discomfort and produce no soreness, and are kept on for a day or two, when the tooth is ready for the operation.

I drill a slot on its labial face one-eighth of an inch, or perhaps less, in length, starting very slightly above the gum-line, one-sixteenth of an inch in width, and as deep as it is safe to go, making an undercut with a wheel or inverted cone bur, and to insure a neat operation the lower end of the slot, this being a superior bicuspid, should be carefully squared, otherwise it will be apparent where the ends of the bandage are connected. Next with a knife-edge disc I cut a notch on the palatal face of the tooth near the cusp and looking toward the gum, so as to give a good firm rest for the gold which is to be fitted into it. I now apply the rubber-dam and prepare the cavities. The only excavating which is demanded is simply what is necessary for the removal of the decay, as the shape of the cavity is of no consequence. This is an important feature of the operation and one that will commend itself to the patient, for in many cases a large share of the pain, which would be unavoidable in preparing a cavity for the reception of a metallic filling, is obviated. I fill with oxyphosphate, restoring the contour, and wait for the cement to set, then smooth with polishing strips and remove the dam.

I then take an impression and make a fusible metal cast upon which to form the bandage. This is made of pure gold, 34 gauge. When it is fitted approximately to the cast I try it in the mouth, place it as nearly as possible in the proper position, and while holding it firmly between the thumb and finger I take a burnisher and press the gold into the notch in the palatal face of the tooth so that it will exactly fit and fill it. Then I remove the bandage and fill up the depression corresponding to the notch with 22k. gold solder, return to the tooth and burnish it down to a fit. I cut the ends so that they will fit into the slot, leaving them just long enough to reach the bottom. Then remove and finish. The part which comes next to the gum should be trimmed to a knife edge and made perfectly smooth. I next give the gold a final annealing and it is ready to set. After again applying the dam and drying the tooth, I cover the inner surface of the bandage with a thin coating of soft cement, placing it in position and secure with a ligature wound several times around, and while the cement is still soft burnish perfectly to the tooth, place the ends into the slot, forcing them up against the side walls, and fill the slot with

gold. The fitting of the tongue or flap which is to cover the crown surface may be done as a separate operation. If the decay included only one proximal surface and the fissure in the crown, there will be only one flap, which will cover the entire length of the fissure. I drill a small hole at the further extremity of the fissure, apply fresh cement to the under side of the flap, burnish it down, press the point into the hole and fill that with gold. If the original cavity included both proximal surfaces and the crown, you have two flaps meeting in the middle of the crown where the anchorage is made.

When the tooth is exposed to view I leave as much of the labial surface uncovered as is consistent with the strength of the bandage. After smoothing and polishing, and securing a correct occlusion by grinding away any point of the opposing tooth that may strike the gold, the operation is complete."

Silk Tape for Finishing off Amalgam Fillings.

I have used silk tape for some time past for finishing off amalgam fillings, especially in interstitial cavities and find it better than linen tape. Being thinner than the latter, it can readily be passed between teeth which are very close together, and, on account of its thin edge, when the cervical edge is near or beyond the gum, it can be pressed up between the gum and the tooth, which ensures all excess of amalgam being removed, while by reason of its smooth texture it gives a finer finish to a filling.—*S. Edward Pedley, Ash's Quarterly.*

Some Experiences of a Stomatologist in Spanish America.

A DENTIST starting to practice in any foreign country has more or less experience of a disagreeable nature. In the *Pacific Coast Dentist*, Dr. Cool speaks of his experience as follows:

"One peculiarity of the Salvadorians and Costa Ricans is that many of them will not go to a dental office to have their dental work done. In some of the wealthier families they will cheerfully pay the increased fee to have the operation done in their homes. In some places where I have worked I have made my office hours from 12 to 1 o'clock of each day, and spent the rest of the day working at the houses of the aristocracy. In this way I would visit two or three or even five houses in a day. Imagine the novelty of working under the palm-tree in the beau-

tiful patio of some wealthy citizen, breathing the scented air that is as balmy as the descriptive breezes of Paradise; joining now and then in the conversation of the dark-eyed *senoritas* disposed about in those graceful attitudes which are as natural to them as breathing. Such surroundings, such an operating room, and, above all such patients, make the usual humdrum office, however gorgeously appointed, seem a tame and uninteresting spot indeed. In certain places where I practiced, my day was considerably cut up on account of the eccentricities (if I may so speak of the climate.) During the dry season in such places I would rise at 5 A.M. and work until 9 o'clock; then I would retire and sleep until 4 P.M., at which time I would rise and work until 6 or 7 o'clock; and oftentimes, though I wore while working the thinnest decent apparel, I would be compelled to stop in the midst of my operation, retire to another apartment, and take a plunge in a tank of cool water before I could continue work. In the operating room life was made endurable to the patient and myself by the evaporation of the water which an Indian constantly kept pouring upon the tiled floor. Such weather is found only near the coast; in the interior the weather is much more agreeable, and the energetic American is very apt to take hold of his work with all the vigor and industry that he would display at home. But he soon finds that this delightful climate is extremely enervating, and he is compelled, struggle as hard as he may, to drop into the lazy ways of the inhabitants. The Spaniards say that the first year of an American's stay is spent in running around at the top of his speed; the second year in lying in a hammock while others do his work.

A dentist who begins to practice in those countries without being familiar with the Spanish language often has ridiculous experiences. For example, when I began to practice in Mexico my stock of Spanish was so limited that I secured the services of a good-natured Mexican who understood English, to write some common phrases with their English equivalents upon the walls of my operating room. When a patient entered the office I would consult this convenient lexicon before asking him to take a seat. Then, when I got him into the operating chair, another glance at the "handwriting on the wall" would furnish me with knowledge sufficient to bid him open his mouth. The rest of the dialogue had to be carried on principally by means of signs and broken English.

The peculiar customs and conditions of the people are sometimes the cause of adventures of a thrilling nature. When I was in Culiacan, State of Sinaloa, Mexico, the celebrated bandit Ignacio Bernal made one of his raids upon the city, defying the constabulary and the soldiers, and levying tribute upon the merchants and bankers. I met him and found him to be a charming fellow and a perfect gentleman in manners. Truly he was by nature like Byron's "Corsair," who was

As mild a mannered man

As ever scuttled ship or cut a throat.

I was engaged by Bernal to go with him to his rendezvous in the mountains, there to operate for him and his leading lieutenants. Every possible attention was shown me, and I was given safe conduct to and from the place. I spent about ten days in the robber's home in the heart of the mountains, and before I departed Senor Bernal paid me a very handsome fee for my services. I thanked him for the money, and he, referring to my bill, laughingly remarked that in paying me he was only dividing his money with a professional brother.

The great distance from the supply houses often proves embarrassing to the dentist in Spanish America. At one time I ran out of plaster of paris, and there was none to be had to my knowledge, within a thousand miles. In this exigency I was compelled to send, at very great expense, to the mountains for gypsum, which I baked and made into a very fair plaster. The big fees I often found were greatly reduced by the expenses of traveling and securing material. I have paid as high as 20 and 30 cents per pound for having my baggage transported a single day's journey. At another time I heard of a man who had some gold suitable for my use, being almost out of foil at the time; I traveled some distance to find him, and then paid him \$180 per ounce for the material, and was glad to get it, too. At another time my engines happened to be disabled by the lack of small attachments that in San Francisco would be replaced in five minutes, but which were not to be had there for any money; so I was compelled to pay \$150 for an engine. In that region, where gas is almost an unknown invention, I used alcohol for vulcanizing and soldering. Once, when my alcohol was exhausted, I remembered seeing a Chinaman in San Francisco soldering with a candle. After some hard work I succeeded in arranging an apparatus by which I could solder with tallow candles."

How Carborundum is Made.

This material is so well known to the dentist that some points on its manufacture may be interesting. From an article on the subject in the Dec. issue of *Self Culture* we extract the following:—

“The crude materials employed for the manufacture are coke from Pennsylvania, white sand from Ohio, salt from New York Salt Works, and sawdust. The coke is ground, sifted into assorted sized grains, and mixed with the proper amount of sand, salt and sawdust. About ten tons of the mixture of the four crude materials are placed in five electrical furnaces, each about fifteen feet in length by seven feet wide and seven feet high. Each of these furnaces is provided with end center-plates, of bronze connected on the outside with four large copper cable, and on the inside with sixty carbon rods. Between the sixty carbon rods at one end and the same number at the other extends a cylinder or core of granules of crushed coke, making a perfect electrical connection. Through this core an electric current of 1,000 horse-power is sent continuously for twenty-four consecutive hours.

The core is twenty one inches in diameter and about nine feet long. The intense heat at the core, known to be not far from 7,000 degrees causes the entire top of the mass in the furnace to become red hot in about twelve hours. At the end of about twenty-four hours the core or cylinder has involatilized impurities about one-fourth of its weight and is now pure carbon, while surrounding it is a formation of the carborundum crystals—carbide of silicon composed of carbon and silicon, atom for atom of each. The five furnaces are dealt with in succession and give in one run about two tons of the carbide or carborundum. This is subjected to a crushing process, then to an acid and water bath, and is then dried and sifted and the separate sized grains prepared for being worked up into the forms required for abrasive purposes. The discoverer of the carbide and the inventor of the process for its manufacture is Mr. G. Acheson.”

Effects of an Impacted Third Molar.

Lately we removed a third molar tooth from the mouth as follows: On examination it was found lying lengthwise of the jaw, the crown being in contact with the distal surface of the second molar, a little below the gum line. After dissecting the gum away from the surface, a large cavity was found on the *distal* surface of the crown. Arsenic was applied and the pulp destroyed. About one month afterward the tooth was nearly severed with fissure drills, and a wedge-shaped steel instrument

was inserted to complete the fracture of the tooth. This was done with two or three sharp blows from a heavy mallet. The crown portion was then removed by turning it inward with a pair of long beaked root forceps. Later a pair of long slender bayonet forceps were used to grasp the root portion. After some difficulty the roots were withdrawn. The time required for this operation was about one hour. Cocain was used as an anesthetic, 2 per cent. solution. The tooth had caused a facial neuralgia for more than eight months prior to its removal. Two weeks after it was taken out the pains ceased.—*Dental Review*.

Bleaching.

Dr. Lunnborg, in *Stomatological Gazette*, states that he soaks the cavity of the discolored tooth with ammonia prior to the application of pyrozone for bleaching. It dissolves all fatty substances, and the action of pyrozone is more rapid and satisfactory.

The Newly Discovered Gases.

The detection of the gas argon in the atmosphere is being followed by a rapid series of discoveries of great interest. Chemists have long known, theoretically, of the existence of another element, which was called "helium," and which was revealed to the spectroscope, in the sun's rays. It was not known to exist in this planet.

Professor Ramsay, a few days ago, in order to ascertain whether there was something in the world with which argon would keep company, was examining the extremely rare earth, found in Norway, known as cleveite. When this mineral was treated with weak sulfuric acid it gave off a gas which has hitherto been regarded as nitrogen. The professor found by close examination that it was not nitrogen, but argon, and moreover, there was associated with it another gas, which he found to be—to use his words—"a gas which has not yet been separated." He submitted it to professor Crookes, and the result is to show that the gas thus found is helium.

M. Berthelot, continuing his experiments in Paris, found that in manipulating argon he developed at ordinary temperature a magnificent fluorescent substance, greenish-yellow in color, and characterized by the spectrum as similar to that of aurora borealis. From this he deduced that the northern lights are caused by a fluorescent matter derived from argon and engendered through the influence of electrical emanations developed in the atmosphere.

Still another recent scientific triumph is the liquefaction of hydrogen by professor Olszewsky, of Cracow, professor Dewar's rival. He finds that the lightest of all gases liquefies at 203° below zero.—*S. F. Chronicle*.

EDITOR'S NOTES.

Prof. Röntgen's Discovery.

THIS discovery promises to prove of inestimable value, especially to surgeons. Although scarcely a month since it was made known it has attracted the attention of the whole world and is being put to practical use. To obtain pictures of metal, bone and other materials through such an apparently opaque substance as flesh, has been looked upon as an impossibility, but Prof. Röntgen, by the use of sensitized plates, and the application of his so called "X-rays," demonstrates that it can be done.

The pictures of the hand, for instance, are so perfect that the shape of the bones is distinctly outlined. Foreign bodies in the flesh, such as bullets, needles, glass, not penetrated by the rays are easily located, appearing in the picture as black patches the shape and size of the object.

One singular thing is that the human eye can see no rays passing from the Crookes' tube to the object to be pictured on the sensitized plate, and yet it is brilliant enough so illuminate the flesh and show the outline of the bones, or penetrate through two and a half inches of solid wood and picture coins placed beneath it.

The radiation differs from all other known forms. Its velocity appears not to depend on the substance through which it is passing, as does radiant heat, electric radiation, sound or surface disturbances in liquids, which are propagated in waves. They are supposed to be ether waves, but not transverse ether waves like the visible or the ultra red or violet invisible light. Röntgen thinks that they are longitudinal ether waves, the existence of which has for a long time been suspected by physicists.

The penetrating character of these rays was known years ago and mentioned by Hertz, and one and a half years ago Lenard obtained shadow pictures by the same means adopted by Prof. Röntgen. Dr. Röntgen, however, deserves credit for discovering

that flesh is penetrated by these rays while bone is not, and it is from this that the practical good is coming. As the subject is further studied we predict other surprising developments and shall watch the progress with interest.

Just what value it will prove to the dental profession remains to be seen. Although bone is apparently impervious to the rays we believe that further research will prove that it penetrates bone, at least to a certain depth, and that we shall be able to determine the shape of roots of teeth, impacted teeth, fractures of the jaw, etc. by this process.

This new form of radiation promises to lead to further discoveries that may eventually disturb many of the theories that are now quite generally accepted.

Dishonorable Methods.

WE have been very lenient toward those dental journals that occasionally copy articles from others without giving proper credit. There are times when such things occur unintentionally; but when a journal appears month after month with article after article taken from various journals and not a word of credit given, we conclude the neglect is not through mistake. This seems to be the policy of the *Items of Interest*. In the January issue its editor says:

“Our ‘Practical Points,’ by Mrs. J. M. Walker, are attracting much attention, and have from the first of their publication. Mrs. Walker has used uncommonly good judgment in her selections and in her condensations. The fact that of the more than six hundred points that have appeared, only two have been openly criticised, while very many go the rounds of the journals without either she or the *ITEMS* getting any credit, speaks well for their accuracy, popularity and acceptability,” etc.

Now, we have great respect for Mrs. Walker, for she is a conscientious worker, as all of our readers know from the amount of material she contributes to the pages of the *OHIO DENTAL JOURNAL* each year. We know that it is no fault of hers that proper credit is not given for briefs that she furnishes to the *Items*.

This editorial says: "The fact that of the more than six hundred points that have appeared, only two have been openly criticised, while *very many go the rounds of the dental journals without either she or the ITEMS getting any credit,*" etc.

How much credit has the *Items* given journals from which these thoughts were taken? Let us see. During 1895 there appeared in this column 311 articles and in only 17 was credit given the journals from which they were taken.

It is true the author's name is usually affixed, but this is not proper credit, for without credit to the journal from which the article was taken, it appears to the readers as original contributed material. Why should the *Items* expect credit from other journals that subsequently copy these briefs from its pages? Is not one deception enough? Is the editor of the *Items* not satisfied with an attempt to make those articles appear to his own readers as original contributions without a greedy desire to have other journals make it appear so to their readers also?

But lack of proper credit is not confined alone to this department, but here and there throughout the whole journal are articles published in the same way.

We have seen original contributions taken *verbatim* from the OHIO DENTAL JOURNAL, and others, cut into three or four sections, and each section appear in the *Items* as an original contribution; not one particle of credit being given.

Are these methods honorable?

And again, —. But, perhaps, we have said enough.

We have been forbearing and are always willing to forgive slight offenses, but when journalistic etiquette is so thoroughly violated every month, "forbearance ceases to be a virtue," and we feel compelled to resent it.

New Publications.

THE PRINCIPLES AND PRACTICE OF DENTISTRY, by Chapin A. Harris.
Revised and Edited by F. J. S. Gorgas, A.M., M.D., D.D.S.
13th Edition, Pp. 1180. Price \$6.00 Philadelphia:
P. Blakiston, Son & Co., Pub., 1896.

This new, thirteenth edition is a great improvement over the twelfth. It is not so bulky. Much of the obsolete material has been eliminated and the book thoroughly revised, every chapter having been carefully gone over and, in almost every instance, new material added. This work has been a standard among dentists for many years and the thorough manner in which this edition has been revised will add popularity to it.

We cannot give an idea of its contents better than by stating that it covers the whole field of dentistry. It is profusely illustrated with over twelve hundred engravings. The Author says: "Many new processes appear in the new edition, and the already large number of illustrations has been greatly increased. Special care has been taken to mention the latest methods for constructing crown- and bridge-work and artificial dentures, and the most approved systems for correcting irregularity of the teeth, fractures of the jaws, etc. The entire work has been brought up to the present advanced standard of dentistry in all its branches."

THE YEAR BOOK OF TREATMENT FOR 1896. Philadelphia: Lea Brothers & Co., Publishers, Pp. 476. Price, cloth, \$1.50.

This is a comprehensive and critical review of the advances in treatment in all departments of medical practice. The reader interested in a special subject can quickly post himself on whatever is new and good in treatment, by a perusal of the chapter devoted to it.

The contributors are men of reputation and the book shows that they have done their work well.

It is a valuable work for all interested in this subject.

SOCIETIES

Vermont State Dental Society.

THE twentieth annual meeting of the Vermont State Dental Society, will be held at the Queen's Hotel, Montreal, Que., Wednesday, March 18, 1896.

THOMAS MOUND, Sec'y,

THE OHIO DENTAL JOURNAL.

VOL. XVI.

APRIL, 1896.

No. 4.

CONTRIBUTIONS.

Cataphoresis for Obtunding Sensitive Dentine.

BY H. L. AMBLER, D.D.S., M.D., CLEVELAND.

THE method we have been using for the past four months, for de-sensitizing or obtunding sensitive dentine, is cataphoresis, and the results are obliteration of sensation, so that excavating can be accomplished without disturbing the sensory nerves, thus giving the patient immunity from pain during the process. An operator who stands at the chair from four to six hours per day, cutting in sensitive dentine, if he is in the smallest degree sympathetic, finds at the end of the day, and often before, that owing to his muscular effort and the high degree of nervous tension which he has been compelled to sustain, that he is completely fatigued both in body and brain, and *if* he has any appetite, then all he desires is to eat, rest, and retire early, foregoing the pleasure of receptions, operas, etc., but if he can do the same amount of operating without a nervous strain, then he feels like a new man, and is ready to enjoy the remainder of the day. There are some patients with whom we dread to make an appointment, because their teeth are always sensitive, and they, through fear and recollections of former experiences will not come to the office until they have had many warnings of dental lesions.

The editor and publishers are not responsible for the views of authors of papers published in the OHIO DENTAL JOURNAL, nor for any claims that may be made by them.

Cataphoresis, means "the movement of fluids and the substances they hold in solution, from the positive pole of electrodes conveying a continuous current in tissue (dentine included,) toward the negative pole." This method can be applied in nearly all cases, and where the sensitiveness is *not* overcome by *cocain*, we use oil of cassia in which has been thoroughly incorporated a trace of thoroughly pulverized soda sulphate; perhaps other obtundents which do not injure the tooth structure, may act as well or better, we are experimenting in this direction, and possibly may have a future report to make. In unusually dense dentine, the twenty-five per cent. solution of cocain hydrochlorate penetrates slowly, but the action and penetration may be increased by adding a trace of soda sulphate, thus making the conducting power of the liquid greater. During action on the dentine, the current carries with it *almost* any fluid exposed to its action under *proper* conditions, that is, any local anesthetic which is a conductor of electricity, or can be made one, is driven or forced into the dentine to a greater or less depth, depending upon the character of the obtundent, porosity of dentine, voltage, and length of time it is applied, a high voltage requiring less time, with the same obtundent, than when a low voltage is used. In some cases the voltage can be carried to twenty or thirty in five minutes without discomfort to the patient. In other cases it can be carried to forty volts in ten minutes, the latter is as high a pressure as we have ever found necessary to use in obtunding sensitive dentine, but when we attempt to bleach devitalized teeth, a much higher voltage becomes necessary. We have only spoken of volts as shown on the index of the "Selector," invented by Dr. Gillette and Mr. Geo. M. Wheeler, as they constitute our guide, when no milliampère meter is used. Owing to the dread of pain, millions of teeth, which could be saved, are annually extracted, and for a century in this country dentists have been searching for something which would do away with, or lessen the pain when excavating sensitive tooth structure, and at the same time have a method which would be generally useful. If the mind is at rest; if it does not interfere with our operating, then a most potent factor in the case has been eliminated. In applying any local obtundent, the process is more or less assisted, by suggesting to the patient that they entirely relax themselves. In anemic, and pregnant patients, the dentine is liable to be very sensitive, and

we may find that in order to obtund, we will have to continue the application longer than usual. Extreme vascularity, as found in young patients, and those of lymphatic temperament, will be found to yield more readily to treatment, than dense dentine in old teeth, or those of bilious temperament. Large tubuli are more easily and quickly dehydrated than small ones; large tubuli admit the driving down into them of drugs by electrical action, much easier than small ones. Dryness of a cavity is an essential condition, and when the rubber has been applied to the tooth, and the cavity wiped out with absorbent cotton, then it is fairly dry, and it is not absolutely necessary to attempt further dessication before using the cataphoretic treatment, neither should we do so in extremely sensitive teeth, nor for very nervous patients; because when you apply absolute alcohol as a dehydrant, the sudden cold produced by its rapid evaporation causes pain which might have been avoided, even if it does only last for a minute; still we have been led to think that in many cases where alcohol was used *before* applying cataphoresis, that the cataphoretic action was more rapid, as the medicament could be forced into the tubuli quicker and easier than when dehydration was not practiced. We are well aware of the value of dehydration, produced by absolute alcohol and a current of warm air, as an obtundent, but we did not use this process before applying cataphoresis; we simply wiped out the cavity with a pellet of cotton saturated with alcohol, used in this manner, it could not be said that the alcohol produced much, if any, obtundent effect.

The degree of success in obtunding, does not seem to depend upon the location, or size of the cavity, as is the case with some other methods; in a small cavity there can certainly be no danger of injuring the pulp, and in a large cavity where the pulp is nearly exposed the medicament acts as an anæsthetic, and after ceasing to apply it, in a short time the pulp returns to its normal sensitiveness, and it is the same with sensitive dentine which has been obtunded; of course, more or less time is required, largely depending upon vitality, physical characteristics, length of time applied, kind of obtundent used, etc. Individual cases vary in results, and when cutting rapidly, you are liable at any time to pass through the obtunded portion, but should this happen, a second application can be made. Experiments have shown that the *alternating* current will accomplish cataphoresis, but it does not work as

quickly or penetrate as deeply as the *continuous* current, because of the interrupted or wave-like current in alternation; the continuous (direct) current is the most efficient and economical, but the expense connected with either is small, and only a secondary matter. The electric current alone does not produce anæsthesia at either terminal, but when a proper medicament is placed in the tooth cavity, the current diffuses it through the tooth tissue by the anode (positive pole), but *not* by the cathode (negative pole). The negative pole, is so related to the positive pole, that the current shall pass through the tooth, or gum, upon which you propose to operate, from the positive pole to the negative pole, and thus obtunding is accomplished at the point to be operated upon. The excavating should be commenced as soon as the positive electrode (platinum in this case) has been removed from the cavity, and if you cut through the de-sensitized layer before the cavity is properly formed, and the patient will not allow you to proceed, then another application can be made and another layer of dentine de-sensitized, thus enabling you to complete the excavating without pain. By applying for a sufficient length of time we think any cavity can be obtunded.

We are using the Fractional Volt Selector (manufactured by the Electro-Therapeutic Co., 32 East Twenty-third street, New York,) attached to the one hundred and ten volt continuous current. The Selector is adapted, when made, to either the one hundred and ten volt continuous or alternating current; also the arc lighting circuit can be used by putting in a transformer to reduce the voltage before it reaches the Selector, which is reliable and delicate as a mechanical apparatus; we have tested the voltage with a volt meter, and find it to be satisfactory. The volt-meter is used to determine the difference of potential between any two points of a circuit by connecting its terminals as a shunt to the circuit between these two points. The Selector regulates the voltage of electric currents, and accomplishes with exactness, a positive control of these currents in very small gradations at the will of the operator, with no sudden increase of voltage, but a continuous, smooth, increase of voltage, imperceptible to sensitive nerves; it also controls the current from a battery, in the same manner as when using the incandescent, or arc, lighting circuit.

Most batteries are not of sufficient strength for cataphoretic

work on dentine, but a special one for dentists, physicians and surgeons, is manufactured, which gives a continuous current from one up to eighty volts. To increase the strength of *ordinary* batteries, a large number of cells would be necessary, thus making them very expensive. A switch has been added to the Selecter, which enables the operator to increase the volts from forty to eighty; as first manufactured only forty volts could be given, but it was found necessary to have more where patients present an unusual resistance to electricity, or when used by physicians and surgeons, on certain parts of the body where the resistance is greater than in other parts, a high pressure of the electric current is necessary in order to drive the obtundent or medicine into the tissues through thick flesh deeply to the seat of affected parts, and for forcing a bleaching fluid or obtundent through sound dense dentine. Cataphoresis is a recognized scientific process for administering remedies for many diseases, as well as for the medication of tissues for surgical operations.

Dr. Petersen says: "In a *medical* way we understand cataphoresis to mean the introduction of medicaments by means of electricity into the body through the skin or mucous membrane, it seems to be a physical process, and not one of electrolysis."

Ordinarily, in electrolysis, both poles of the circuit are placed in the material (electrolyte) to be decomposed, then the current is turned on, and its passage from pole to pole through the connecting media (electrolyte) produces electric analysis, or electrolysis.

Dr. Morton says: "That there is little reason to doubt that in electrolytic and cataphoric action, one is as distinctive a property of the current as the other."

Whether we do or do not have electrolysis of a drug applied in a tooth cavity, perhaps will bear investigation. We know that when the current is applied to guaiacol, in or out of a tooth, that certain changes are plainly visible to the naked eye, in each case the same; thus electrolysis *might* be inferred, anyhow, it produces an obtunding effect.

M. André, of Paris, claims as a result of his experiments, that guaiacol will produce effects identical with those obtained from the use of cocain.

Guaiacol (Gwí-ak-ol) is the product of the dry distillation of guaiacum, an ingredient of wood-tar creasote; it can also be obtained by fractional distillation of beechwood-tar creasote, and

is often used as a substitute for creasote in cases of tuberculosis, chemical composition C_7H_8O , and it is from 60 to 90 per cent. creasote. The idea of fractional distillation, viz: Different substances boil at different temperatures; raising the temperature of a mixture of two liquids to a point above the boiling point of one, but below that of the other, will vaporize the one but not the other. Where guaiacol 3 i and cocain hydrochlorate gr. v is used in the tooth, six or eight minutes will be sufficient to obtund *if* the voltage has been carried to 20 or 30, but a few minutes longer will be necessary when the voltage has only been carried to ten or fifteen. In order to produce *complete* solution of the cocain in the guaiacol, place them together in a test tube and apply gentle heat.

A twenty-five per cent. solution of cocain hydrochlorate, containing two per cent. boric acid, makes a good conducting media and a stable solution, and good results can be obtained by its use in obtunding sensitive dentine. We have never seen any unpleasant or toxic effects from the use of cocain in the teeth, and it seems safe to use as far as its effect upon tooth structure, pulp, or system is concerned. Cocain imprudently administered by other methods to patients of extreme susceptibility, or to hysterical persons, and those in whom the brain or circulatory system is not in a normal condition, may produce general symptoms more or less grave and frequent. In cases of poisoning, from its use, give hypodermic injections of whisky, ether or atropia, and inhalations of amyl nitrite.

Where *no* milliampere meter is used, and before beginning an operation, for the purpose of testing the Selector so as to know whether the current is passing through it, we use an electroscope of our own designing which is simple and answers the purpose exactly, for by holding the positive electrode (platinum of Selector) on one post, and then touching the negative electrode to the other post, the deflection of the electroscope needle instantly shows that a current is flowing through the Selector.

The same company has a milliampere meter for twenty dollars, and it is a desirable instrument to use in connection with the Selector, still we have not found any difficulty in working without one; it is connected to the Selector, viz: carry wire from positive post of Selector to positive post of milliampere meter; then attach cord of positive (platinum) electrode of Selector to the other post

of the milliampere meter, now attach negative (sponge) electrode as usual to negative post of the Selector, then when the current is turned onto the Selector, if you touch the electrodes together for an instant, the milliampere needle will be deflected, thus showing there is no break in the connections. When the needle records two milliamperes you know that enough current has been turned on to *de-sensitize* any case if none of it is escaping through the gum or other tissues; in many cases one-half of a milliampere is sufficient, but more produces quicker results. Put on the rubber dam, remove food debris from the cavity, and when necessary, cut away the margins; fillings near by can be insulated with melted wax, or low heat gutta-percha, being sure they are thoroughly stuck to the tooth so that the obtunder will not flow under them; clamps on cervical cavities can often be insulated in the same way, if they are not and the obtunder flows over onto them, part of the current is carried away, but if impossible to insulate, owing to size of cavity, position of clamp, etc., then the patient will bear a somewhat higher voltage, for the reason above given. Cavities can be obtunded by only putting the rubber over a single tooth, and afterwards extending it over as many teeth as desirable. Be careful not to touch a metal filling in a live tooth with the electrode, because if you do, it will cause more or less pain.

We have devised a flat spring steel band which passes over the top of the head and holds the sponge electrode in any desirable position on the face as near as convenient to the tooth to be operated upon so that the current will only travel a short distance. This relieves the patient or an assistant from the necessity of holding it. The sponge should be well dampened with water in which there is a trace of sodium chlorid; now saturate a pellet of cotton, just large enough to fill the cavity, with the obtundent, and apply to it the platinum electrode, then begin with a small current, not enough to cause unpleasant sensations, gradually increase it until the patient gives a sign, previously agreed upon, that they feel something, then stop turning on the current and hold the electrode quietly in the cavity, and as the obtundent penetrates the dentine, the *something* will be felt less and less until it all passes away; now turn on more current until another warning is given, proceed in this manner quietly and with confidence. Some patients will make no sign, and thus the

obtunding can be quickly accomplished. This we have found in three cases of cervical cavities when the *clamp* was used, the voltage was carried to forty in six minutes and complete obtunding was secured. In one of these the teeth were all very sensitive, and the lady would not allow the cavity to be hardly touched with the finger nail or wooden tooth-pick; others will give a sign when one or two volts are used; in a recent adult case, four was the maximum voltage which could be borne without complaint, this was continued for twenty minutes, when a very large crown cavity in a molar was painlessly excavated for a dentist at a clinic; formerly he had not been able to remain in the chair without an assistant to hold him when having a tooth excavated. The feeling in the tooth is described as a tickling, pricking, pressure, or very slight aching, but sometimes when they do not know that electricity is being used, no signs or sensations will be given. Occasionally, when beginning, patients will say a prickling is felt at the location of the sponge electrode; again, at times, we are satisfied that some of these sensations are the work of the imagination.

Dr. Gillette, to whom *great* credit is due for having made this process practical, says: "That patients often confuse the sensations of the current with pain."

After the application has been completed, in cases very sensitive to the current, we turn the index needle on the Selector back to "O" and then remove the sponge electrode first, in order to prevent shock, but in the majority of cases these precautions are not necessary, neither are they if you use the latest improved Selector. The running of elevators connected with your current does not produce any appreciable difference, and we have not found it to be detrimental. The electric current is used successfully on the mucous or cutaneous surface for surgical operations when the voltage is controlled by the Selector, and the electric plugger, mouth lamp, cautery, root drier, etc., will probably be adapted to this instrument.

Hemorrhage; An Interesting Case in Practice.

BY DR. E. L. ASHTON, TRAVERSE CITY, MICH.

MRS. M—, Age 44. German. Sanguine temperament. Mother of four children. Called Saturday evening, Feb. 15, 1896, at 6.30 to have a lower left first molar removed. Extracted it with no unusual in convenience. Sunday, Feb. 16, at 6 A. M., was called by the husband, accompanied by the following letter, as he could not speak English.

"Doc would you please bee s kind and give me something to put on my wife gooms. Since you pould her touth last night it keeps right on bleiding and wee cant stop it, it bled All last night and this moring. Please give me something to put ont it sche feils quit seick sche loosing so mouch blood.

* WILHELM MASS."

I sent some powdered iron and cotton with advice to plug the cavity tightly.

Hemorrhage stopped until noon of same day. Then they wanted me to call. I found patient quite weak and badly scared. There were nine women, three men, and a number of children in the room and the husband running in every few minutes asking, "Is she dead yet?"

I sent them all out but the interpreter and assured her there was no danger. I plugged the cavity with Monsell's solution and gave the patient fifteen drops fld. ext. ergot, followed by twenty drops in one hour when the hemorrhage disappeared.

Called again at 6:30 P. M. Hemorrhage started more profusely than ever. Inquired into condition of patient and found that she had been unwell three days when her tooth was extracted, and from the nervous shock she stopped flowing at once.

I gave hot drinks and put her feet in hot mustard water. In a short time she started flowing and the hemorrhage from the alveolus immediately ceased.

I left the alveolus plugged with cotton and iron. Feb. 13 I called and removed the compress and the patient is in good condition.

This demonstrates the necessity of inquiring into the condition of your patients. Had I done so on my first visit I should have used my last remedies. Thus I would have saved my patient much loss of blood and myself considerable anxiety.

Knick-Knacks.*

BY F. E. BATTERSHELL, D.D.S., N. PHILADELPHIA, O.

To replace a block of teeth where the pins are broken or have pulled out.—Take a piece of 22k. gold wire, twelve to fifteen gauge, cut two bits of sufficient length to reach across the thickness of the approximal surfaces of the block, and project into the rubber. Rivet-head both ends. With fine wheel, cut circular notches on either side of the block large enough to allow the pin to pass through between it and adjoining block into space for rubber. Cut these notches near or into border of tooth; and when the work is completed, and the clinching rivet-head finished it will resemble a neat filling of gold. Also the block will be more secure than with the original pins. Sample pinless blocks may be thus used.

Electricity for tooth-ache.—Whether from inflammation of the pulps or of the peridental membrane, tooth-ache may be arrested at any period before transudation of the leucocytes has reached the point of abscess, by the application of a mild electric current for from ten to twenty minutes. For this purpose the positive current should be divided, one wire fastened to the forceps and the other, with the negative put into the hands of the patient. Now begin with the mildest current and increase until the sensation begins to be unpleasant, then diminish a little, and apply forceps to the tooth. Protect lips by slipping a rubber nipple over beak of forceps. Increase current again as much as can be comfortably tolerated, and hold until pain altogether subsides, which is about ten minutes. Remove for a brief space, and apply a second time for five minutes; this to counteract the reflux in the capillaries. Watched and waited minutes are long, but on this account do not narrow the prescribed time. After placing forceps with right hand, change to left, and resting fore arm on arm rest, stand at rear of patient, otherwise the operator may experience some inconvenience. These directions carefully followed will quiet tooth-ache and complaint.

Excavators vs. burs.—The present tendency seems to incline towards the disuse of excavators and more and more in favor of

* Abstract of paper read before Tuscarawas Valley Dental Society, January, 1896.

burs. Some operators going so far as to depend altogether upon the engine in the preparation of cavities for filling. This new habit we think is reprehensible, for several reasons: first, excavators remove carious material more rapidly and thoroughly. After burring out a cavity as carefully as can be done, one does not *know* the precise condition without having examined the walls with an excavator. Such search often reveals a branching cavity sometimes as large or even larger than the first; and always discovers carious material beyond the range of engine drills. The rotating process of drilling is so unlike the sweeping effect of cutting with the excavator, that what is run over with the engine drill, is easily turned out and swept away by the excavator. Another valuable point of difference is, that the excavator can always be sharpened and kept sharp, while the bur is becoming progressively duller; consequently when much used, instead of cutting it only rubs. To the many well-known forms, the office forge has supplied an additional one for our use, which others may find servicable. This form reaches those indentations under the grinding surface of molars and bicuspid, so difficult of access. It is shaped like the letter U; one stem of which, slightly curved and continued, represents the handle. Three or four sizes of this instrument, in spoon shape and hoe shape, will enable the operator to do easily what would be very difficult, and oftentimes undone, with ordinary forms. Again the engine hand-piece, encumbered by the heavy coil, is clumsy beside the free and slender excavator. Therefore the touch of the excavator is much more sensitive, which is a very significant quality when approaching the nerve, or when working frail walls. The excavator ought not to be discarded. It once was young, but is now old; yet it has never fussed, or grumbled, or wobbled, or refused to work when treated respectfully.

Does the Practice of a Specialty of Medicine tend to make a Man Narrow Minded?*

BY C. M. WRIGHT, M.D., D.D.S., CINCINNATI, OHIO.

THERE are some notions rather general in character that have been floating about in the minds of medical gentlemen for some years past, in relation to the inquiry which heads this paper. The impression prevails, and is occasionally made special, in some address before a medical society and in conversations among so-called general practitioners, that the specialist is or is too liable to become a "one idea'd" man. Possibly the laity, too, entertains this notion, or half formed opinion on the subject. I am disposed to believe that it is an almost innate idea not always expressed but always half believed that every man is simply an exponent of his trade or calling. Hoary proverbs exist in most languages and are handed down from father to son favoring this idea, and insisting upon its verification, as, "Let the shoemaker stick to his last." And I say let him, for the specialization of the contraction of his arms and chest do not interfere with the harmonious development of any and all other qualities of all other cells. The old story of the three men, a priest, a miller, and a tailor viewing for the first time the grand falls of the Niagara river, has become an American classic. The priest in his admiration at the mighty fall of water, raised his hands and his eyes toward Heaven and exclaimed, "Lord, how wonderful are all *Thy* works!" The miller equally impressed, cried, "Lord, what a waste of water power!" While the tailor is reported as having clapped his hands on his knees and of exclaiming, "Lord, what a bully place to sponge a coat!"

The impressions on the mind of the hearer dimly outlines the idea that the three men were narrow minded and only viewed this great natural exhibition from the standpoint of their specialties—that they could have only these partial views of any phenomenon, because one was a priest, another a miller, and the other a tailor. The priest having cultivated his mind along the line of reverence for his Master, the miller from having given his attention often to the possible failure of the water in the little stream that turned his mill was narrowed down to views on

* Read before Ohio State Dental Society, Dec., 1895.

the value of falling water as a power. Yet if the miller had been called an engineer and had begun devising means to utilize this force which he knew was correlated to all force, to release the latent energy in some form of matter that would wake up another force, that would eventually supply light and power to a whole state, we would say, "Great head"—"fine imagination"—"wonderful mathematician." The tailor I regard as a joker, a man of wit and humor who, if he would only narrow down his imagination and serious thoughts to the proper fashioning and sponging of our garments, would merit the hearty thanks of gentlemen who wish to be well dressed.

What constitutes a "narrow mind?" What is a "broad mind?" The terms are bandied about so freely that we ought to have definite and fixed ideas as to their meaning. We hear teachers speaking of this or that pupil as one having a "good mind." "Yes," we say of our friend, "he has a fine mind." We speak of mind as of a substance that can be good, or fine, or broad, or narrow—a something that we feel quite positive about in regard to its weight, quality and size, and yet philosophers cannot give an exact or satisfying definition of the word. Hume claimed that impressions and ideas are the only things known to exist, and that mind is only a name for the sum of them. Others have regarded impressions and ideas as forms or modes of a continually existing something. Separate impressions and ideas or particular ideas may be absent, but the something which holds ideas and impressions together and persists in spite of all change is mind. Now when we speak of mind and qualify it by fine, or broad, or narrow, do we mean a fine or broad something which holds impressions and ideas together? We ought to be exact on this point. When I was a school boy we had a little text book that could be carried in the breast pocket of a coat, called "Watts' on the Mind," and certain properties were said to belong to mind. No definition was given of the word. Perhaps Mr. Watts would have answered us, if we had asked, "What is mind?" "*No matter.*" "But what is matter?" "*Never mind.*" The properties of mind were said to be Perception, Memory, Imagination and Reason. Psychologists can make a great deal more out of each of these qualities than we want to at present, and Herbert Spencer can point out to us that mind is composed of feelings, and that the revivability of past feelings,

the association of feelings, and the relation and revelation of feelings are processes of mind, and that intelligence is governed by the law that seems to prescribe over the physical matter of creatures. The law of evolution. That mind is evolved.

I only refer to this part of the subject in order to impress upon you the difficulties in the way of proving that a man is narrow or broad minded if the metaphysicians should call us to account and ask us to define the meaning of the words which we employ so freely. Practically we can agree that the man who has cultivated the habit of seeing or of observing accurately and precisely, and who is able to recall or revive the images seen, and who can appreciate, appropriate, compare and decide carefully about these images, and who can draw conclusions about the possibilities of other images from his past observations, is a man with a cultivated intelligence. Let us say for short, a man of mind. Now all that we shall want to inquire about is whether these powers can be developed in a general practitioner to a higher degree, than they can in a man who practices what is called a specialty of medicine. And I will begin the inquiry by a question or two. Does exact observation of any image, or object, or field, tend to develop the mind, as well as loose, or careless, or more superficial observation? Is it not more probable that the specialist with the narrower field will observe more closely and exactly, and that his images will be more distinct than if he should include several specialties or the entire organism for a field?

Second Question.—Does the size of the object observed affect the breadth of the mind? Does study with the microscope narrow and study with the telescope broaden the mind? One man may spend his life in the study of microorganisms while his brother sweeps the heavens with a powerful microscope. The field of one is infinitely large, of the other infinitely small. But the development of the mind behind the eye that sees, is effected by the freshness or complexity of the impressions and ideas that become interwoven with the cells of the brain. I said freshness and complexity with an intention, for we all recognize that habit renders the actions of mind and body easy that were once hard, and that automatism is fatal to further development. The microscopist and the telescopist each must find fresher and still more complex images than those he has become long familiar with if he does

not wish to limit his mental development. It is not then the size of the object studied or the field worked so much as it is the way it is studied and worked that broadens the mind. The specialist of to-day is constantly meeting entirely fresh and wonderfully complex phenomena on account of his eager and tireless observation, which tax his utmost powers of reason. He cannot get into a rut and remain long without being buried from sight by the turning up of the ground by his brethren in their search for fresher and better ruts. The words of some critics, who talk about "partial culture" as a quality of the specialist, and "general culture" as belonging to the so-called general practitioners, are meaningless, when we come to weigh them carefully, for if we study the history of civilization and the development of reason among races, we shall find "records showing that the advance towards conceptions of great complication and high generality, has taken place by slow steps by natural growth. Simple enumeration existed before arithmetic; arithmetic before algebra; algebra before the infinitesimal calculus; and the more special forms of the infinitesimal calculus before its more general forms." Numerous illustrations of this law could be furnished by Physics, by Chemistry, by Physiology. The law holds good whether we study by the synthetic or analytic methods, as far as development of mind is concerned. The law that I refer to is that which holds, in the development of intelligence. The priest must have had training in observation and perception, and memory and reason before he could recognize the phenomenon of Niagara, as a wonderful work of the Creator. A child would have stooped to pluck a tiny red flower or would have been attracted by the doll in the hands of another child, and would have taken no note of that which so impressed the mind of the priest.

We shall have to refer again to the tailor, or run the risk of being accused of shirking the most pointed illustration of the implications that specialists see every bodily ill from their one narrow outlook from some special tissue or organ. It is as we have intimated the popular opinion, that if a patient with the symptom headache, applies to an oculist, he finds the cause in some abnormality of the vision and gives a prescription for lenses. The same patient applying to a dentist, will be treated for some lesion of the dentinal pulp. If he applies to a specialist in the treatment of nervous diseases, or stomach diseases, or throat

diseases or ear diseases, it is generally believed that each specialist will treat his especial organ for the cure of the headache. The nerve centres, the gastric regions, the throat or the ear will be electrified, washed out, cauterized or tweaked according to special line of the Physician. This is as laughable as a joke, or as a bit of humor as the sponging of the coat at Niagara falls on the part of the Tailor, but it is in no sense a true statement of the case. These specialists have cultivated their powers of perception to a high degree. They have invented instruments of precision to assist in the exercise of their mental processes so that reason and judgment may be of the highest order. The whole range of the sciences has been brought or is gradually being brought to bear upon the subject of their several and special studies. Their exact methods have been gradually adopted by the so-called general practitioner and the Science of Medicine has been lifted out of the murky atmosphere, which enveloped it in the past, and stands in a clearer light to-day than ever before. I think the specialist has done much toward this clearing process. From the careful microscopic cultivation of a single tissue, the medical mind is gradually embracing exact knowledge of the entire organism. It is a natural growth, a natural expansion. The natural process in the development of mind, whether that mind belongs to a child, a savage, or a medical student. The habit of confining and focusing the attention to the physiological or pathological changes occurring in a cell tends to the development of the mind so occupied and broadens it and strengthens it, making deductions possible and safe, that could not be so from careless observation of premises. The deductions will be more logical and in accordance with a more highly developed reason from the more exact observations of the specialist than from generalizations in the beginning not based upon facts. An old friend of my youthful days, who had studied medicine in the East, came West at an early day to begin the practice of his profession, but having no means to assist him while waiting for a practice and finding a fine opening in the city of his selection, for a boy's school, he concluded to become a teacher for a year or two, and when more secure in his finances, to begin the practice of his chosen profession. The school succeeded admirably and the time never arrived when my friend felt like giving up the certainty of a good income for the uncertainty of a young doctor's practice. As the years rolled

on, time found my friend in the position of a highly respected teacher with a comfortable fortune saved from his surplus income, but it also found him a discontented man. This was his complaint, that a teacher's work was narrowing in its influence on the teacher, while a profession like law, medicine and dentistry had broadening tendencies. A favorite illustration of this dear old Mentor was the homely one of a calf tied to a stake. When the calf grazed at the full length of its tether, around and around, the tether was constantly shortening as it was wrapped around the stake and the calf was finally drawn into the narrowest possible circle about the stake. "In your profession, my dear boy, you begin at the stake and unwind the tether and enlarge your circle, broadening yourself, in your freedom and in your field of action, and the circumference enlarges enormously and naturally as the years go on." I do not now agree with the opinion that the teachers life is so narrowing, but the picture of the calf and the stake, the tether and the circumference is a good one, and helps to illustrate the natural law of development of the specialist, or of him who in any scientific walk in life begins at the stake and persistently unwinds the tether by enlarging the circumference gradually of his thought and reason.

President's Address.*

BY W. H. TODD, D.D.S., COLUMBUS, OHIO.

It has been customary for your president to make an annual address. There would be nothing more appropriate than to make some general observations concerning the responsibilities centered upon this as a state society, the necessity of an increase of membership and the influence it would have upon the community at large if that could be brought about.

It must be borne in mind, that this as a state society, has a responsibility that is not accorded to any local or district society. We are expected to formulate and promote any state law pertaining to dentistry, and if that law should lack any of the essentials necessary, even if it should be formulated by some interest foreign to the state society, we are held accountable.

*Read before the Ohio State Dental Society, December, 1895.

We should always take that dignified, unselfish and self-sacrificing professional attitude, which the general public so little understand and appreciate, knowing that our responsibility to the human family is fully as great, even if, through ignorance, they try to open the door of legislation so wide that dental legislation may itself be prostituted to purposes of dishonest jobbery and quackery.

Again, as a state society, we are looked upon as representing the advanced, thinkers and original investigators of dentistry in our state. As such we should make a prior claim to all original matter and in return we can encourage these workers with our thoughtful sympathy and counsel, taking care that their efforts with the discussions that take place, will be carefully reported, and placed before the profession.

There are dental journals throughout the state that should foster all interests in the society and delegate themselves its official organs. In that way an interest could be encouraged in localities where there is none, thereby benefiting both the community and our society.

Among the many perplexing questions that come before us is: how to bring up the standard of the dental profession. The college faculty is doing a noble work in the opportunities it gives a student and the high grade it requires to graduate, but this faculty can look around and see some of its best students stooping to the small and mean ways in the practice of dentistry that are so condemned by the profession.

Now the question arises, what shall we do with the worthy graduate. Let him shift for himself? He has passed all the chairs and received his diploma, giving him the right to practice dentistry; he may have impressed all with his fitness for his profession, not alone by his desire to be the best in his class, but by the sense of duty that compels him to perfect himself in his chosen profession, so that his services may truly be worth their hire.

There are forty-eight dental schools in this country with 1208 graduates for 1895. How many of that number have joined our societies?

The responsibility of the college faculty does not cease on the day the student graduates, for the diploma he takes is the faculty's endorsement of his professional standing and ability. Dr. J. Y. Crawford, in his address before the American Dental

Association, requested that all reputable dental colleges formulate a uniform oath or obligation to which the student should subscribe. The faculty should impress the student with the importance of joining dental societies. He could then be made to feel that he had found a home where he could mature into a full fledged member of a progressive profession, where his mind which has been so carefully trained, will find a field in which to expand and grow and where he can become an original investigator in some of the many branches of the profession, whereas, if he be left to himself, he may be attracted by the many advertisements which are to be seen, and begin to lower the standard and character of dentistry by producing cheap and poor work, with a reckless use of some nostrum, the contents of which he knows nothing, regardless of consequences, for the sake of deceiving the public and gaining a fee—having but one desire, that to make money; having but one aim, that of doing cheap work at a high price.

With 25,000 dentists, what portion of that number attend our meetings?

If the Ohio State Dental Society be a representation the number is very small.

The dentist who fails to read the dental literature of to-day, becomes a back number. The dentist who does not attend at least one meeting of a dental society during the year loses all interest in the elevation of his profession, and what right would he have to censure the layman for disrespect if he show such a lack of interest.

If each member would exert himself and persuade one or more dentists from his locality to attend these meetings, with the increased number, what a power we might be and what an influence we might have in the community,

In concluding I wish to express my pleasure at meeting with you again this year, that we may not only talk over some of the new thoughts that are to be presented at this meeting, but congratulate each other and the committee on the splendid representation we had from Ohio at the tri-state meeting.

We might consider here the invitation which was extended and accepted by the State Dental Association of Michigan and Indiana to meet with us in '98, for we should all appreciate the work connected with such a meeting and do everything possible to assist the committee in their arrangements.

Treatment of Pulpless Teeth.*

BY DR. J. J. GROUT, ROCK RAPIDS, IOWA.

IN this age of crown- and bridge-work, the subject of root filling assumes gigantic proportions. As the success or failure in this particular line depends in a great measure upon the ease and stability of the roots or crowns to which we attach these pieces, it is very essential that the work done in their preparation be of such a character as to assure, as far as may be, the permanency of the operation. We are all striving to that end. We all have our own methods of procedure. I have mine, and I shall endeavor to briefly describe it to you. I have not time to describe all the minutia of each operation in the numerous conditions in which we find these teeth, but shall touch upon one or two we are most often called upon to treat. I realize there are many methods of attaining the same results. All are good that prove successful. I would not say a word to change the treatment of any who have found their *modus operandi* satisfactory in their hands, but to those who have difficulties and failures, and who are looking for more light on the subject, my paper is dedicated.

I do not claim my methods of treatment are infallible, but in the main, successful. In a practice of twenty years, I have been called upon many times to wrestle with this problem, and have been looking anxiously for any light that would assist me on the way. What points I have been able to gather, and have proven successful in my hands, I shall try to give in as condensed a manner as possible.

Where I have a pulp to destroy, I use a paste of arsenic and creosote, applying from 1-60th to 1-120th of a grain, according to the size of the pulp and the ability of the patient to present himself for treatment. Where practicable and possible I apply tannin and glycerin after the pulp is devitalized and leave it from six to eight days when I extract the pulp entire with a broach, cleanse the root with pyrozone and campho-phenique, thoroughly dry, moisten the canals slightly with eucalyptus oil, pump chloro-percha to the ends of the roots and follow with gutta-percha

* Read before Northern Iowa Dental Society, Sept., 1895.

points. Where the pulp is putrescent, I follow a little different course of treatment. After removing all septic matter possible with pyrozone, and drying, I introduce on a shred of cotton carbolic acid 1 part, oil cloves 2 parts, oil cassia 3 parts; seal this in with Gilbert's stopping, leaving it from two to ten days as indicated, then fill as above described.

Judgment should be used in all cases, as to amount of paste necessary, length of time it should be left in the tooth, what medicament should be used later, general conditions of the tooth and the patient's ability to present himself when needed, etc. But in each and every step be conscientious and thorough. I always use the dam when possible. I also use root drills, burs and sulfuric acid to open up the root canals, when in my judgment they are indicated. No arbitrary set of rules can be laid down for the treatment of all cases. My advice is: Use as little medicine and as few treatments as are consistent with good and thorough work. There are many ways of filling root canals. Most of them are good. Any way is good that is successful. In my hands the ways just described have proven very successful. Follow the motto: "Prove all things; hold fast that which is good."

Abscess of the Antrum.*

BY E. D. BROWER, D.D.S., LEMARS, IA.

Causes.—We find a number of authors who claim that the majority of inflammatory diseases of the lining of the maxillary sinus is a continuation of the inflammation of the nasal mucous membrane. This view is not coincided with by others. Dr. Wm. Carr, of New York, in a paper read before the American Medical Association in 1889, stated that of the cases that have been under his immediate observation, fully eighty per cent. were caused either directly or indirectly by diseased teeth.

When we consider the anatomical relation of the teeth, to the antrum, that they are separated only by a thin layer of bone, and frequently a root protrudes into the antrum, covered only by the membrane, when we consider the vascularity of the alveolar

*Abstract of paper read before the Northern Iowa Dental Society.

process, and the frequent pathological changes of the teeth and their alveoli, these changes being pericementitis, alveolar abscess and necrosis, we can easily comprehend why diseased teeth cause such a large percentage of antral diseases.

In my own experience, in every case of antral inflammation or abscess I have found an opening from some tooth into the antrum, and I am satisfied in my own mind, that all the cases that I have had under my care have been caused by diseased teeth.

Symptoms.—There is a dull aching pain in the cheek, with heat, redness, and fullness of the soft parts externally.

There may at once be purulent discharge from the nose, but the swelling of the mucous membrane soon closes the sinus. There is now throbbing pain, rigors, fever, expansion of the jaw-elevation of the malar bone, projection of the molar teeth, depression of the arch of the palate bone; and the finger seldom fails to detect the fluctuation.

Treatment.—Here again we have a variety of opinions and some very elaborate descriptions of methods of opening into the antrum.

In all the cases that I have had there has been a sore tooth to extract. In looking over my record of cases I find I have had openings from the first bicuspid to the third molar. If there is no diseased tooth, extract the first molar. Make an opening into the antrum large enough to use a syringe freely. Syringe first with warm water.

I find in my first cases I used a solution of carbolic acid after the first cleansing with warm water, later I used listerine instead of carbolic acid.

Again, the past few years I have used peroxid of hydrogen in various degrees of strength followed by diluted listerine.

I have found some cases of recent origin that the extraction of a tooth with one or two thorough washings was sufficient.

To describe more fully my method of treatment, I will relate a few cases I have had. They have ranged from very slight inflammation to a very persistent discharge of pus, with exfoliation of the alveolar process and floor of the antrum.

Case 1.—April 9, 1885, Mrs. L—, age 60 years. I extracted the only remaining tooth in the superior arch, a right molar. May 23d I inserted a rubber plate, and noticed that the gum had

not healed as it should, but sent the lady away advising her to return if there was any trouble. She returned in two weeks with teeth in her pocket, and said, "Doctor, I cannot wear them, they fairly pull the side of my head off." She described symptoms of antrum abscess.

On examination I found an opening from the socket of the molar into the antrum, and on inquiry found that about twenty years previous she had similar trouble in that side of her head, with a bealing in the ear that troubled her for about a year and she always suffered some on taking cold.

I enlarged the opening, and syringed with a solution of carbolic acid.

She lived so far in the country that she could not call often. I gave her a solution of same with instructions to syringe daily. One month later she returned wearing her plate with comfort. The opening had healed completely.

Case 2.—A case of alveolar abscess extending to and involving the antrum.

Mr. R—, age 50; July 25, 1885, had the left lateral incisor extracted, his face being slightly swollen, but found no relief. When I first saw him his nose was considerably swollen, and the left incisor loose, which I extracted. Next day he called and to my surprise the cuspid and bicuspid were loose. He said he got wet going home in the rain the day before.

From the bicuspid I found an opening into the antrum. I syringed the cavity with carbolized water, (forty drops to the pint) and left him in the care of his physician, while I was attending the American Dental Association in Minneapolis. During that time his physician extracted the second bicuspid and the cavity had been syringed but twice up to August 14th, when he came to me again, saying, "I guess that face is getting along all right." But I found pus oozing out of all the sockets of the teeth extracted and a hard lump still at the root of the nose. I syringed carefully, and found the alveolar process partially absorbed and quite loose.

August 15th, found pus discharging freely. Removed all the process from the median line to the first molar, extending to and including the floor of the antrum. Gave him a syringe and a solution of carbolized water to wash the cavity.

September 2d, the antrum seemed to be all right, gum looked

healthy except one opening. On probing found it running toward the nose, syringed the cavity with water, I found an opening for the fluids in the left nostril. He said the right central felt sore. September 5th, found the right lateral quite sore and both lateral and central somewhat loose; so I extracted both. Gave him a solution of listerine and distilled water. September 10th, saw my patient and the abscess was healing rapidly. There was a complete recovery in three months.

Case 3.—March 6. Mrs. C—, age 30. This lady was brought into my office to have a tooth extracted. I found upon examination that she had trouble in the left antrum. I extracted the tooth, a first molar, which was followed by a copious discharge of pus. She said she had had trouble with that side of her face for six months and described all the symptoms of antral abscess. I syringed the cavity with dilute listerine once a week.

The fifth week the opening was healed and there was no pain or soreness on that side of her face.

Case 4.—October 1, a young man age 35, came to me to have the roots of the first left superior molar extracted. I extracted them without any trouble and handed him some water. He commenced to wash his mouth, leaning over the spittoon and to his surprise the water came out of his nose. He called my attention to it and on inquiring, he described the usual symptoms of antral abscess. I syringed the cavity with listerine once a week for about two months; at that time I could not detect any inflammation and I allowed the opening to heal up.

I will not tire you further with reciting individual cases, but in reviewing my record of cases since peroxid of hydrogen has come into general use, I find that I have used it in almost every case after syringing with warm water.

There is one thing that must be observed. A free opening must always be had before using peroxid of hydrogen.

If the case at hand has a copious discharge of pus the antrum should be syringed daily; but if not, I would at first, see the patient twice a week, then once a week until complete recovery. Quite a number of cases that I have had, the patient lived some distance in the country, I provide the patient with a syringe and a solution with instructions how to use.

Dental Education.*

BY W. T. JACKMAN, D.D.S., CLEVELAND, OHIO.

DENTAL education, like almost all other dental subjects, has been so thoroughly discussed of late that one is led to conclude there is hardly a provision of this broad subject which has not been written or talked about. However, I believe we all concede that but a start has been made toward a final solution of certain phases of this, at the present time, all important subject.

When, where and how shall the dental student be trained for this most important of secular callings?

What would be the best dental legislation for each state, or rather, how shall the legislation of the various states be made to harmonize?

What should be the literary attainments of the applicant for dental honors?

The answers to these and many kindred interrogatories have not, as yet, in the main, been satisfactory. The writer is glad to know, however, these questions are being given much thought by the profession, at present, and it is reasonable to conclude that the most of them will reach a satisfactory solution at no very distant day.

What shall be the literary attainments of the applicant for dental honors? Since this, of all others, is conceded to be the age of progress in the educational world and if we desire, and we certainly do, to be known as a learned profession, or, if you prefer, a learned specialty in the medical profession, then the time has come to require a higher literary training; certainly nothing less than the evidence of graduation from high school, the possession of a teacher's certificate from the county board of examiners, or their equivalents for admission to our dental schools. Bishop Vincent said recently to a class of young men for clerical honors "God does not so much call men to preach as He calls them to *prepare* to preach." So with dentistry. The crying need of the people to-day is for men and women to *prepare* to practice dentistry. If the applicant possesses the above literary training, then he should seek a tutorage for at least one year with

* Read at Ohio State Dental Society, Dec., 1895.

some good dentist, not so much to actually *do* in this brief time as to see *how* to do. Let him spend the greater part of this year reading on operative and prosthetic technics and then he will be ready to take up his college work and push it with a vim to such a successful termination as the untutored can not dream of. If he can afford to spend two years with a good preceptor, so much the better. Then follows his college course which should not be completed before twenty-one years of age. He should now be ready or prepared to begin the practice of dentistry.

It is, indeed, pleasing to note the advance the dental schools have made in the last decade, probably a greater advance in thorough practical teaching than in all their history before. In fairness to the schools organized in the last few years, it must be conceded that they gave the impetus to nearly all this forward move toward greater things. Whence came that modern idea, that idea which has almost revolutionized dental teaching—dental technics? Surely not from the old schools. Let it be understood we would not wrest a vestige of honor from the older schools, for they have done a splendid work; but it must be admitted that they had fallen into somewhat of a rut in their methods of teaching. When the National School of Dental Technics was organized a year ago last August, at Old Point Comfort, it was gratifying to see these schools eagerly becoming members and those who did not join at that time fell into line, we believe, this year at Asbury Park. So all are now on the same high plane, each eager to do its best for those who apply for instruction within its portals. The National Association of Dental Faculties has had much to do in bringing about these much to be desired results. While it is very pleasing to note the forward move by the colleges, it is with regret we are compelled to take cognizance of the fact that there is another body endowed with vast power, which does not seem awake to its possibilities,—we refer to the National Association of Dental Examiners. *It is to this body that the profession must look to harmonize the dental laws of the various states, and see to it that those states which have no dental law, get one as soon as possible.*

We know that it may be argued that the function of an examining board is to carry out certain provisions of law already made. This is true as applied to individual states; but not so we take it, as applied to the National Association of Dental Examin-

ers; for there is no national law to govern them, but rather their function is as stated above. We note but fourteen states and the District of Columbia were represented at the last meeting. This leads us to think that unless a better organization is effected much help along educational lines can not be hoped for, from this body by the profession—certainly not in the direction of dental legislation.

Let the National Association of Dental Examiners effect a *thorough* organization. It is suggested that a special effort be put forth to have every state in the Union, as well as every reputable school represented, no difference whether such state has a dental law or not. Get a representative dentist from that state to come, get him enthused with the idea of a necessity of getting a dental law in his respective state and help him to get it; for as stated this body should be the central authority from which all suggestions pertaining to dental legislation should come. This being true, then when this body deems it wise that dental laws should be made so and so, should be amended or revised, then the dentists of the various states should see that it be so. 'Tis true, gentlemen, to accomplish this will require a few years of hard, persistent work, but will not the results be worth infinitely more than the cost? Then will we have reached the point where one state can not say to the practitioners of a sister state, even though they be graduates "our standard is higher than yours, therefore if you wish to practice within our borders, you must pass a special examination."

After a thorough organization of this body the first thing to be accomplished, in the present chaotic condition of legislation, is to see that every certificate gotten by actual examination, from one state board is received by every other state board as *prima facie* evidence of the owner's right to practice dentistry. Volumes have been written on this point, but it seems to the writer this question can be settled very easily with justice to all.

National legislation, barring the question of constitutionality might be, after getting it, very unsatisfactory to the profession.

This national body, when organized as above, should at each yearly meeting formulate a list of questions and decide as to the nature of the clinics the applicant should give, for I do not believe a single person should be granted a certificate without his first having demonstrated his ability to *do* as well as having given

satisfactory evidence of his *theoretical* knowledge. Then each board should use this list for the following year. This seems to be a solution of this matter. In this way each state can ratify what the other does. Some would say that would necessitate a revision of some of the state laws. Grant that, would it not be an easy matter to convince legislators of the equity and justice of such revision?

Just a word in regard to the formation of our state boards. The writer does not believe we shall ever have the kind of state boards we should have until their creation is divorced from politics. The state board should be the progeny of the state society. Its creation should be by election. Such men only should constitute our state boards who have a high conception of dental legislation—such men as will assist the colleges in their efforts to elevate the standard of dental education by making their test of the applicant's fitness even more severe than that of the colleges. If the National Association of Dental Examiners will create such a standard there will be no need of the states passing laws requiring that applicants for certificates be graduates; for if such a standard were created then probably not more than one non-graduate would receive a certificate where a hundred now do.

Another plan is suggested for the formation of state boards and their duties pertaining to the harmonizing of legislation of the respective states, namely: let each board be composed of not fewer than five members; when there are two or more dental schools in the state, let there be two members for each school with an extra member, that the board may be composed of an odd number; this board, then, should hold the final examination for the colleges within the state. When a student is given a diploma after such examination, said diploma should be a passport to practice dentistry in any state in the Union. This state body to be governed, of course, by the national body as outlined above. This would relieve the various dental faculties from the responsibility of the final examinations and thus whatever of odium might be attached to the granting of degrees to supposedly incompetent persons would be removed, at least from the faculties.

The central thought of this paper, as you will have noticed, has been to suggest some ways, without entering much into detail, out of the legislative tangle the profession is now in.

Whatever of merit or demerit these suggestions may have, it is hoped that this society will thoroughly discuss this feature of the paper and put itself on record so that eventually the profession may arrive at something definite pertaining to this phase of dental education, viz: dental legislation.

Soft Foil and Conservative Methods in Filling Teeth.*

BY DR. W. T. ARRINGTON, MEMPHIS, TENN.

DR. ARRINGTON described in the fewest words possible, his method of preparing cavities in the teeth, which he groups in five classes: (1) Labial and buccal cavities; (Incisors and cuspid approximal cavities; (3) Incisors and cuspid compound cavities; (4) Bicuspoid and molar approximal cavities; (5) Bicuspoid and molar compound cavities, the gold used being in all cases Abbey's soft foil cut into sections and crimped with Dr. McLellan's crimpers, inserted with "gentle hand-mallet pressure." When an approximal cavity is large, extending to or beneath the gums, a soft cylinder is placed to act as a pad against the cervical wall. When contouring is required anchorage is afforded in the partially completed soft gold filling, for the use of Watt's No. 2 or William's Crystalloid Gold. Separations are made with cotton. Very minute details are given for dovetailing in compound cavities. In cases of any large crown cavities when it is desirable to retain overhanging walls or cusps, after all the decay is removed, the seams are filled with Caulk's cement, forced to every point with pledgets of cotton, dipped in the dry powder. Under certain circumstances the soft foil ribbons are annealed in the alcohol flame. Gold and tin foil are sometimes used, crimped as before and also a combination of amalgam and cement "should the circumstances of the patient require it." In doubtful cavities where decay has progressed so far that only a leathery flake is left over the pulp, a pledget of cotton dipped in "a thin paste of iodoform, with equal parts of wood creosote, turpentine and oil of cloves," is placed in the cavity allowing it to remain five or ten minutes. A small pellet of amalgam is then placed directly against the cervical walls of the cavity and firmly pressed into position with

*Summary of Paper read before the Southern Dental Society, Nov. 1895.

pledgets of bibulous paper, the amalgam not extending further into the cavity than simply to fill a groove in the cervical wall. Thoroughly well mixed amalgam, is then incorporated in the proportion of one to three with Caulk's cement, and with the fluid made into a thick creamy paste, the walls of the cavity are thoroughly lined with this paste all excess of moisture being removed with bibulous paper. The remainder of the cavity is then filled with amalgam, all excess of mercury being taken out with pellets of tin foil under pressure of a warm instrument. Os-Artificial being then used, teeth so filled at that time standing to day as monuments to the feasibility and correctness of this method.

Dr. Arrington began the use of Abbey's soft foil in 1856, No. 5 being adopted, as found best suited to any and all classes of cavities.

During many years experience, the various foils, pellets, cylinders, etc. introduced, have all been tested, but Abbey's soft gold still holds the first place for purity, absolute uniformity and adaptability to frail walls and undercuts. There are to-day many fillings preserving the teeth, that were put in by "soft foil-fillers" forty years ago, but Dr. Arrington doubts if the same proportion filling of cohesive gold will stand the test of forty years service.

In the discussion of this paper, Dr. J. Y. Crawford spoke of Dr. Miller's experiments in testing the germ-resisting or antiseptic powers of different filling materials. Of all materials submitted to the "culture" test, only those containing copper, and "Abbey's soft foil which had not been subjected to heat," showing a clean clear space around it not infected with fungi, but on the same foil which had been subjected to red heat the same fungi developed as on the others, showing that there is a subtle *something* in the soft foil which has a germ inhibiting influence, and which is destroyed by heat. For contour work he lines the cavity walls with Abbey's soft foil.

Dr. W. G. A. Bonwill said that cohesive gold comes far short in tooth-saving qualities of Abbey's old-fashioned gold, but if we are using a make of gold that we understand, and use successful, keep on using it, don't run after everything new because some one else says it is *the best*.

In closing the discussion which voiced largely the field of operative dentistry, and was opened, closed and renewed during three sessions, Dr. Arrington spoke of the abuse of retaining pits.

by contour operators, many of the most beautiful operations designed primarily to save the tooth, causing its eventual loss from pulp irritation.

Can the Dentine be Reached Through Systemic Treatment.*

BY DR. R. C. YOUNG, ANNISTON, ALA.

NOTE the structural changes that take place in the teeth, as evidenced by their behavior under cutting instruments, the same teeth at one time almost defying the keenest transfer of an instrument and at another cutting soft and chalky, without any apparent derangement of the general system but often associated with close mental application, or the strain upon the nervous system incurred by the devotees of fashion.

Nature will never develop an organ and then leave it without further care; there must be a constant supply of nourishment passing to the teeth—not a circulation but more like an irrigation, the tubuli being the ditches which carry the nourishing medium, a supply as essential as it is limited and rich with the principles necessary to the support of the organ. When the system fails, from any cause, to abstract the necessary pabulum from the abundant supply offered in common diet, then this must be supplemented by the lime salts offered in some outer form, as in lime water, or the syrup of the lacto-phosphate of lime. This he has found very advantageous in toning up a patient.

In this discussion of the subject of Dental Hygiene, Dr. J. Y. Crawford emphasized the importance of thoroughly cleaning the mouth and teeth of every patient before proceeding to other operations—proper information given on this point has great moral force and is far-reaching in its results. The importance of cleanliness in the mouth previous to the eruption of the permanent teeth, has not been sufficiently dwelt upon. Decay may not be contagious but diseased teeth are infectious, and the baby teeth should not be allowed to afford lodgment to septic matter, that will produce decay of the permanent teeth as they erupt. We should insist upon parents bringing their children, previous to the eruption of the first permanent molars, that all disease may be

* Abstract of paper and discussion before the Southern Dental Society, Nov., 1895.

eradicated, or we will not be responsible for their permanent teeth. Great good would result if all would unite upon this stand. Dr. Crawford considers that the premature loss of the four first molars is the source of more injury to the American people than all other diseases together, and this loss is due to the bad conditions preceding their eruption. There are many broken hearts and desolate hearthstones due to this cause alone. Diseases of the alimentary canal, phthisis, pulmonalis and countless other diseases are due to infection from the bacilli of the mouth harbored in diseased deciduous teeth, and causing the loss of the first permanent molars.

Dr. G. F. S. Wright: The teeth should be cleaned before anything else is undertaken in the mouth, unless it be necessary extracting. Patients can readily be taught that this is your invariable rule; therefore, they may at first question the necessity for the operation.

Dr. T. C. West: The great difficulty is to get hold of the children in time to prevent painful operations. Parents keep them away from the dentist's office until they are actually suffering from aching teeth. The ignorance of parents into the eruption of the permanent teeth, is surprising. If we could get our school teachers to attach as much importance to clean teeth as to clean hands and faces, asking how many had brushed their teeth, etc., very much good might be accomplished. Simple lessons in oral hygiene, and the use of the tooth brush, should be made part of the kindergarten course, and for the most advanced grades, the subject should be introduced into text books. I am working along that line in every town and hope to do some good.

Dr. R. C. Young: We all realize the importance of the tooth brush and floss silk, etc., and doubtless try to impress it upon our patients, but I go even farther than this. I make the litmus paper test with every patient and show them the result. It is surprising to find the prevalence of acid secretions, not necessarily from fermenting food around the teeth, but from preceding conditions, perhaps from fevers—in one case with result of typhoid fever six months before. I am aware that Dr. Black seems to prove that there is no such thing as hard teeth or soft teeth; that all have about the same relative per cent of lime, etc., at the same time we do find teeth from which sparks almost fly, and others that would make a mark on the blackboard, and I

cannot believe that teeth that are so radically different, can have the same amount of mineral matter. Patients themselves realize the changed condition of their teeth, and I do find that the structure of the tooth is benefitted by the administration of lime water and the syrup of lacto-phosphate of lime, and the desired result is more promptly obtained than when we get it from nature's laboratory in the cereals and other food. It is not difficult to interest patients in this matter, and it gives them a higher appreciation of dentistry. Show them the acid condition by the litmus paper, and then put them on Phillip's milk of magnesia, and after a few weeks show them the changed condition. In this way we antagonize conditions which may be the result of remote lesions.

Dr. Cowardin wished to hear the views of others on the position of the essayist that there could be a retrograde metamorphosis through the circulation. There may be a hardening through the deposition of calcic salts, but it is an error to suppose that there is a circulation through the dentine structure. Testing for acid conditions is an excellent idea and may lead to beneficial results. The difficulty about the second dentition is that the harm is done before we get control of the children. Departure from normal diet frequently begins very early, and we cannot expect to have normal tissue with the usual abuses in diet. The little stomach is stuffed every hour of the day with something which is of no benefit to it. Instead of eggs and milk and chops, the child wants cake and candy, and this is not the normal food for tissue building.

ALL SORTS.

Treatment of Pyorrhea Alveolaris.

In a paper read by Dr. G. B. Darby before the New York Odontological Society and published in the *International*, the author speaks of the treatment of pyorrhea alveolaris, as follows:

"Dr. Peirce has had and is having absolute cures from his form of treatment, which is as follows. Almost invariably patients suffering from pyorrhea alveolaris, will upon inquiry, be found to be large feeders, and above all large meat-eaters, taking little or no exercise, frequently addicted more or less to the use of alcoholic liquors. In the first place all butchers'

meat—such as beef, mutton, veal, etc.—is forbidden; in its place is substituted a diet of fish, the white meat of fowls, oysters, soft-boiled eggs, and milk; alcohol in every form is forbidden, and the patient is given the following treatment: fifteen minutes or half an hour before breakfast a glass of hot water with a five-grain tablet of tartarlithine dissolved therein, before luncheon another five-grain tablet in a glass of hot water, and after dinner the same dose is repeated, then at bedtime a glass of water without the tartarlithine is taken, so that the patient receives fifteen grains of tartarlithine and at least two quarts of water during the day. The tartarlithine dissolves the urates, and the hot water washes them out and aids their excretion in the urine. This treatment is kept up for several weeks, when the dose is gradually decreased, until but five grains of the tartarlithine are taken per day, but the hot water is kept up as before. Locally, any desposit there may be is carefully removed and the pockets treated with peroxid of hydrogen to remove any trace of pus there may be present, then washed out with a solution of hydronaphthol—one drachm to two ounces of water.

The patient is then given a prescription of hydronaphthol, ten grains; alcohol, one ounce; glycerin, one ounce, and water two ounces, and told to take a few drops and rinse the mouth several times a day. Under this treatment Dr. Peirce has had in every case marked and rapid improvement, and in some cases absolute recovery. Dr. Kirk's treatment is very similar to the above, except that he gives larger doses of the tartarlithine, in some cases as high as forty grains being given in the twenty-four hours; he also recommends in some cases the use of salicylate of ammonia, one drachm divided into six drachms, taken three times a day; also tartarlithine and cascara in combination, and reports equally gratifying results as those treated by Dr. Peirce. It must be remembered that, as this is a constitutional disease, at least I firmly believe it to be, if the patient goes back to the former mode of living, with the use of butcher's meat, alcoholic drinks, lack of exercise, etc., the blood will become charged with an excess of uric acid, the deposit will, in all probability, be again formed upon the teeth, with the subsequent formation of pus, etc., and all the symptoms of hæmatogenic calcic pericementitis be again present.

In this connection of uric acid in relation to dental disease, I believe, and I think those who have had more experience in the study and treatment than I, will bear me out in the statement, that in many cases of pyorrhea erosion is also present, to a greater or less degree, and from the same constitutional causes. In those cases where there is extreme wasting away of tooth-structure and perhaps no symptoms of pyorrhea present, if the general health of the patient is inquired into, and his mode of

living, it will be found that the symptoms are almost identical with those resulting from pyorrhea, and that sooner or later the individual will be found to be a sufferer from rheumatism or gout, which are closely allied in the uric acid diathesis.

Seven, Eight, and Nine: Three Eventful Years in Second Dentition.—How to Save Much Oral Deformity.

In a paper on this subject published in the *Stomatological Gazette*, Dr. R. W. Morris points out why the seventh, eighth and ninth years are eventful ones in second dentition. Regarding the question how to save much oral deformity he says:

“In this paper we do not intend to present methods of operative procedure, but a plan to reveal to child and parent the need of taking such steps and methods as an examination of the child's mouth would reveal.

How can these things be brought about? We would suggest the following plan: That we, through the State Board of Dental Examiners, in person, and through the aid of the public press, bring such an influence to bear upon our State legislators as to secure the passage of an enactment making it compulsory on the part of the parents and guardians to have the mouth and teeth of their children who attend public schools examined by competent dentists once a year during the years of seven, eight and nine.

By such a law we would have the authority of the State to bring the knowledge of our special instruction to the individual child, through the public schools, and thus be enabled to reach and teach them while assembled en masse.

After the passage of such a law, under its authority I would suggest the following plan to carry out its provisions: That the various dental societies appoint in open meeting such of their members as they deem most fit for their work, and assign two of them to each of our public schools. These examiners to send for a small number of the children at a time to meet in the room of the principal and there conduct the examination. One of the examiners to conduct the examination, the other to make the annotations of such abnormal conditions as may be found upon an examination tablet, or chart of the teeth, with such plain signs and symbols (which should be explained on the margin) as would be readily understood by all; for example, showing what teeth are decayed and need filling: what teeth are in malposition and need regulating, or extracting, etc. These examinations to be made in accordance with printed

instructions; provided, that no dentist be allowed to conduct the examination whose fitness and standing is not recognized by a certificate from State Board of Dental Examiners.

By this plan we, as dentists going to the children, would appear as instructors, and attract more thought and attention to the teeth and their needs in one day than is bestowed upon them in a year under the present conditions. Not only would we give an uplift to the boys and girls of seven, eight, and nine, but this wave of influence would reach the young men and women, teachers and principal, and wider still—the entire community.”

Methods of Practice.

A report of the Alumni Clinic, held at Chicago, January, is given in the *Dental Review*. From this report we extract the following practical suggestions:

A Method of Backing Ordinary Vulcanite Bicuspid with Gold and using them as Swing Teeth or Dummies.—This method of applying the full cuspid vulcanite bicuspid in crown work was shown by Dr. F. F. Fletcher, of St. Louis, and much admired. The method consists in filing the heads from the pins of the tooth, attaching the end of a strip of thin gold plate to the pins, drawing the strip tightly around the buccal surface, clipping out all of the plate on this surface except a narrow strip along cervico-buccal margin, attaching the other end to the pins and soldering, thus forming a gold cap, the backing and cervico-buccal strip being continuous.

Aluminum Plates.—Dr. G. D. Sitherwood, of Bloomington, Ill., demonstrated a method of preparing aluminum plate for swaging, and swaging same. In preparing the plate Dr. Sitherwood places in contact with it rice cloth and runs it through rolls; this slightly corrugates the surface. These corrugations assist in retention of the plate, air chambers being dispensed with in all cases. In annealing, no oil is used. Tissue paper is placed between the die and counterdie and plate, and a rim is turned.

A New Method of Fitting Bands to Roots that are Buried Beneath Gum Tissue.—Dr. W. H. Taggart of Chicago, demonstrated a method of overcoming the most serious of these difficulties, and fitting bands accurately to roots where there is even but slight projection from the line of the alveolus. Briefly, Dr. Taggart's method consists, after first leveling down the root, in taking a piece of pink gutta-percha and after slightly softening it, pressing it firmly upon the root, this gives an accurate impression of the outline of the root. This impression is then imbedded in plaster,

a smooth surface being left all around the imprint, and on a level with it, a rubber tube $\frac{1}{2}$ or $\frac{5}{8}$ inch in diameter is then set over the impression, and the lowest fusing metal obtainable is fused and poured into the tube, and directly upon the gutta-percha impression. This gives a model of the outline of the root on the end of a metal cylinder, the end of the cylinder is then carved down to the outline, and a perfect model of the root, in metal is the result. Upon this model the band is fitted.

Excision of the Infraorbital Nerve.—A surgical operation commanding keen interest was performed by Dr. Truman W. Brophy. A woman, Mrs. A. R., a native of Austria, age thirty years, had for a period of five years, suffered almost constantly with pains of a neuralgic nature, seated in the region of the right superior maxilla. Though many efforts had been made to gain relief, through the administration of remedies, and local applications, none had ever been successful. When the patient first presented herself to Dr. Brophy, a careful examination was made, and the morbid condition pronounced neuroma of the infraorbital nerve, and the operation of neurotomy was decided upon.

The operation, briefly described, consisted in making an incision commencing just over the right lateral incisor and extending to a point opposite the first right molar. The soft parts were then elevated until the infraorbital foramen was disclosed, when with a tenaculum the nerve was grasped at its exit from the foramen, at which point the neuroma was found. The diverging branches were then dissected out, the trunk was seized by forceps, drawn forward or out of the foramen about one inch and excised. The wound was then cleaned antiseptically, iodoform gauze was placed in contact with it, and the patient dismissed.

While the operation of neurotomy has long been practiced, research of the writer has failed, thus far, to find another case recorded where an operation for the division of the infraorbital nerve within the foramen, has been performed without making an external incision.

The result of the operation has been gratifying in the extreme. The patient has, ever since the discomforts resultant from the operation passed away, enjoyed complete immunity from pain, and sensation of the part which was in some degree interfered with, is returning, and has already become almost normal.

O Tempora ! O Mores !

In the prospectus for the *Dental Digest*, 1896, we learn among other things the following : " Our object is to furnish the dentists with a readable journal, which is something they have not got at the present time,"

"In this matter of making reviews we lead, others follow." "No other journal contains so much readable matter," etc., etc. We pause to suggest to *The Cosmos*, *The Review*, *Ohio Journal*, *The International*, and others, that they might as well shut up shop. No earthly excuse longer remains for their existence since this new luminary has burst upon the dental world with so many excellencies which "*they have not got.*" The editor and proprietor, however, would fain apologize, for he says: "This will not appear again."—*Western Dental Journal*.

[We still live and have this to console us; that never in the career of the OHIO JOURNAL have we had so many new subscribers, in any one year, as we have received for the present, 1896, volume.—ED.]

Syphilis of the Mouth.

From a contribution by Dr. G. MacGowan, published in the *Stomatological Gazette*, we take the following extracts:

"The syphilides are sharply defined, dense and uniform cellular infiltrations of the papillary body and the corium, and differ from one another only in size.

"These cells are not fitted to undergo permanent organization into connective tissue, but always undergo involution and disappear by absorption or by purulent degeneration. . . .

Within the mouth cavity the most frequent seat of the chancre is the tip or anterior portions of the sides of the tongue, the tonsils, and the inner surface of the cheeks. In these positions some of the distinctive characteristics of the chancre are so modified that the diagnosis is not always readily assured. . . .

"Any sore occurring in this situation, with scant secretion, painless or only moderately painful, with a circumscribed indurated base varying in grade from that of parchment to cartilage, which refuses obstinately to heal under the application of simple protective measures, but steadily persists while the days run into weeks, becoming finally covered with a greyish pseudo-membranous deposit, is a chancre. Such sores are generally single; but the multiple ones are not rare. When they exist they are due to the application of the virus simultaneously to several spots of abraded surface. Whatever their number or situation, they give to the lip a stiff and clumsy look not to be accounted for by the size of the ulcer. It is rather the sharply circumscribed and growing infiltration of the tissues which gives the characteristic appearance.

"The diagnosis of typical cases of chancre of the lips need only to be made from cancer. The differences are so apparent that it seems

almost improbable that mistakes may be made. Yet very good surgeons have removed chancres from lips under the belief that they were dealing with cancers. The points of diagnosis to be remembered are well tabulated by Cornil:

CHANCRE OF THE LIP.

1. Occurs at any age.
2. Usually insensitive.
3. Has a regular outline.
4. Is elevated.
5. Grows only a few weeks.
6. Submaxillary glands involved in second week.
7. Heals under mercurials.

EPITHELIOMA OF THE LIP.

1. Seldom before middle life.
2. The seat of darting pains.
3. Irregular in outline.
4. Ragged and bleeds easily.
5. Grows many months.
6. Submaxillary glands involved only very late.
7. Not affected under mercurial treatment.

"To this I may add I have observed that in labial cancer, usually over the peculiar waxy and curled edge of the ulcerated surface, may be seen climbing the distorted and twisted blood-vessels, and plunging into the depths of the growth to disappear as do the blood-vessels in certain diseases of the optic fundus. . . .

"The differential diagnosis of this disease from cancer of the tongue is based upon these points of distinction:

GUMMA OF THE TONGUE.

CANCER OF THE TONGUE.

- | | |
|---|---|
| <ol style="list-style-type: none"> 1. Is the growth of days or weeks. 2. Is a tumor which ulcerates. 3. Purulent discharge abundant and like soft and decayed cheese. 4. Pressure dislodges only caseous masses. 5. Painless or nearly so. | <ol style="list-style-type: none"> 1. Is the growth of months or years. 2. Is an ulceration surrounded by a tumor, destroying it yet extending with it. 3. Discharge sanious and filled with gray or black sloughs. 4. Pressure dislodges sebum plugs not unlike those found in erythematous lupus of the face, from the mucous membrane surrounding. 5. Pain at intervals shooting toward enr—diagnostic. |
|---|---|

The ulcer of commencing cancer is generally oval, but may be a simple elongated fissure with a firm base and everted edges. The ulcer extends up to the border of the growth, but the latter always keeps a little ahead. Its surface is irritable and bleeds easily. When the infiltration of the tissues becomes extensive it is accompanied by marked anemia and sallowness.

When an ulcerated gumma of the tongue is neglected or irritated there is much danger of cancer developing upon it. Unless these ulcerations of late syphilis upon the tongue have been under observation from the time of their first appearance it is difficult sometimes to positively distinguish them from tubercular ulcerations. But a proper attention to the points laid down when speaking of mucous patches of the mouth will generally enable you to do so.

The simple glandular ulcer, with its red rim, steep sides and soft yellow or gray base, without infiltration, and painful, cannot be confused, by an observant man, with a syphilitic lesion, secondary or tertiary. In the ulcerations of mercurial stomatitis, the blue line on the gums, due to the deposit of the metallic mercury about the necks of the teeth and the swollen tooth-marked tongue serves to distinguish it from the loosening of the teeth due to gummata seated about the necks or otherwise sound and painless teeth. It is to the infiltration of the hard and soft palates with tertiary growths and deposits that are due the most startling, disgusting and tedious results of ulcerative syphilis of the mouth. Sometimes the vault of the mouth melts away in a night. Without warning of their presence the gumma situated between the layers of the soft palate or within the hard palate, break down and unite the cavities of nose, mouth and pharynx. The quacking voice and pitiful efforts at swallowing of these victims are familiar to most of you. And, much to the credit of your calling, it is in these cases that the fertile resources of the dental surgeon have shown themselves frequently successful in relief. In two cases coming under my observation, one in my own service and another in that of my friend, Dr. D. Montgomery of San Francisco, I have seen the soft tissues overlying and the alveolar processes of the upper jaw at the juncture of its two halves, become the seat of an immense and sluggish gummatous thickening, which after a long time becomes necrosed. This process in my case extended to the hard palate and the dome of the mouth."

Advice to Graduates.

From "An Open Letter to a young Friend," published in the *Southern Dental Journal*, we make the following abstract:—

"As it is but a few weeks to the close of your term at college, and you hope to receive your diploma, I will suggest as a *requisite* and first step, before you shall presume to practice under any circumstances, go before your State Dental Examining Board and get endorsement of qualification to practice. Then at earliest opportunity join the State Dental Association or Society and prepare to be an active and progres-

sive worker in it for the further advancement of your profession and for personal benefit.

Your first duty when you commence practice will be to determine to be conservative, equitable, pains-taking, patient, self-possessed, humane and generous—rendering service at all times and under all circumstances, commensurate with your ability to rich and poor alike.

You may vary in use of material; it is admissible and often requisite but not your manipulative ability and skill. When a patient—even the poorest and most humble—is admitted to your operating chair to receive your professional services, you must feel it to be your duty to give him the benefit of your skill to the extent of your ability. A taxing duty often repeated and well performed will become a pleasure after a while, and not drag heavily as a tax or be regarded as loss of time, labor and material, for we will realize sooner or later there is good and possibly a blessing in the service rendered to somebody; and it is well to learn the lesson early in life that it is best not to be contracted and live alone for self. A humane service, willingly rendered, often proves a sweet and profitable privilege. Bear in mind continually that it will not do to vary skill in your manipulative service, or grade your skill according to condition or grade of patient in chair. High grade of work for one class and low grade for another is unprofessional, unmanly and unjust, and will prove hurtful to manipulative capacity and seriously detrimental to reputation as a dentist; therefore be guarded and conscientiously strive to render like service to all. There is a *future* in practice, as well as the *present*, to be considered. The poor and unfortunate of this life must not be ignored and slighted by dentists any more than by physicians. True principle and humanity forbid. Dentistry is a profession of professed importance with extended outline, daily reaching further, and must not be wanting in sympathy, generosity and humane excellence.”

A Device for Supporting Loosened Teeth.

From the report of proceedings of the New York Odontological Society, printed in the *International Dental Journal*, we copy the remarks of Dr. W. B. Davenport, as follows:—

“I wish to describe and exhibit a little mechanical device, which was made to be permanently attached to the lower incisors and cuspids of a patient whose teeth had become exceedingly loose from tartar and consequent disease of the gums. Certain restriction had been put upon my efforts by the patient, as, for instance, a demand that whatever I made for him should have no clasps, that it should not annoy the tongue, and

that it should not show, and I think the result which I hold here and which is a model of the piece inserted, quite interesting and helpful to others.

Having tied the six lower front teeth together with silk, an impression of them was taken with moldine and a cast obtained with Melotte's metal. A strip of pure gold thin enough to be burnished into place with hand instruments was applied to the lingual surfaces of the teeth on the cast. It covered the upper half of the teeth, curving very slightly around onto the sides of the cuspids, and not quite coming up to the cutting edges of the whole six. The cuspids were firm, but the incisors very loose, which prevented mastication to a great extent. This strip of gold, after being perfectly fitted as described, was strengthened with solder fillings, and then pierced with a drill in six places to correspond with holes already made in the teeth, and large enough to admit threaded platinum pins of the size of those in plate teeth, from one-eighth to three-sixteenths of an inch long, as the thickness of the teeth would allow. All the teeth were alive, but the drilling, which was done with the right-angle hand-piece, was accomplished with comparatively no pain, as oil of cloves was used constantly and no pulps were exposed. The drill-holes were above the pulps in each instance, but as near to them as was safe. The alignment of but one pin at a time with its two drill-holes in gold strip and tooth was obtained at a sitting. A drop of wax held the pin securely to the gold, as it rested in position in its hole in the tooth and permitted the removal of the piece without bending the pin. Investing and soldering followed, and was performed six separate times. Finally, the strip of gold plate holding its six pins was set into the teeth with thin oxyphosphate of zinc, and allowed to remain thirty minutes (the dam having been previously applied) before allowing saliva to touch it. It has now been worn with comfort over two weeks, and mastication is performed without trouble."

Anchorage.

Dr. J. N. Farrar contributes the following to the *Dental Digest*:

"*Tipping of Anchorage Teeth.*—In operations for correction of irregularities of the teeth, the first and most important consideration is the anchorage; not only should it be properly situated, but there should be an abundance of it. In our professional literature we often read of dentists whose experience has proved to them that *bands on teeth* do not permit sufficient anchorage for moving cuspids posteriorly, and that large plates are the best anchors.

“So far as I have traced out the cases of these unfortunate dentists, I have always found single tooth ferules were used as anchors, instead of two or three ferules united in some way by solder; or if clamp-bands were used, they were improperly applied, or else were not of a size that would embrace more than one tooth.

“So long as a dentist does not understand the laws of anchorage-resistance, and the philosophy of applying anchors upon the teeth, he will very likely meet with trouble. There is always liability of moving anchor teeth by any kind of lateral force upon them, but tipping of teeth to an injurious extent seldom results from skillful hands.

“There are cases where a single molar is sufficient anchorage to move a tooth, but it is not a safe plan unless the anchorage tooth is supported by contiguous teeth. In my own practice I make it a rule to use more than one tooth for anchorage, and generally embrace them in united ferules or clamp-bands. Ferules may be held in contact by solder, but a better plan is to connect them by wire, the ends being soldered to the sides of the ferules. Three teeth may thus be embraced with two ferules, the middle one having no ferule upon it.

“Another point to be observed in nearly all cases is to have the force applied as near to the gum as possible. If a single tooth-band is used, the force should generally act from or upon *opposite* sides, and not from or to *one* side only, unless it is desirable to turn the (anchor) tooth in its socket. When more than one tooth is embraced in the band, the force may always be applied from or upon one side only, without danger of turning the tooth.

“Plates covering the gums or roof of the mouth have their uses in cases where the teeth are few and scattered, and occasionally they are called for under other circumstances, but I think that they should never be used where the more cleanly and less injurious skeleton kinds can be successfully applied.

“Side teeth can be moved anteriorly or posteriorly; therefore, whenever side teeth are to receive a force which will cause them to move posteriorly, if the space anterior to them is needed for evening up teeth anterior to the space, calculations should be made to guard against their return to their former positions, which would be liable to crowd the teeth again out of line. So also when the side teeth are drawn forward to close spaces, provision should be made for holding them forward for a considerable length of time, or until new teeth shall erupt posterior to and in contact with them. These remarks are especially applicable to those cases requiring the correction of protruding teeth, in which the side teeth are generally moved forward more or less, and are nearly as applicable to cases requiring the moving of front teeth anteriorly, which causes the anchor teeth to move posteriorly.

"To be satisfied with simply evening the teeth or placing them in line, making no provision for preventing the return of over-crowding of the teeth, is not skillful, and such neglect is very apt to lead to disappointment. The teeth should be firmly held in their proper places by some kind of mechanism acting as retainer or as a matrix. The best mechanisms are small and consist of wires, or of ferules and wires united by solder, cemented into cavities or upon the teeth."

Necrosis following Crowning.

A case of extensive necrosis following crowning is recorded by Mr. H. W. Turner, in the *Transactions of the Students' Society of the Dental Hospital of London*. The patient, a girl aged 15, had a left upper central incisor crowned. About eight weeks later she returned with the remaining three incisors, and also the left canine loose, an abscess being present over each of these roots, and a large piece of necrosed bone could be felt. She gave the following history: "After leaving the hospital she was unwell (being a strumous looking child), and was laid up. The next day she noticed a small abscess above the root of the tooth that had been pivoted; it was left, and got worse, and the pus passed upwards, infiltrating the tissues of the cheek. She was then treated for erysipelas. On her return to the hospital the four loose teeth and the crown were removed, as was also a large piece of necrosed bone extending from the canine tooth on the left to the lateral on the right side, and this was removed. The case progressed favorably under treatment. The pivoted root on being examined was found quite clean; but the apical foramen was rather large, and it is possible that some septic matter had been forced through it."—*Jour. British Dental Association*.

New Heater for Operating Table.

At the New York Institute of Stomatology Dr. W. St. Geo. Elliott, exhibited this new device, the following description of which appears in the *International*. He said:

"Allow me to call your attention to a new operating-table heater that I have recently designed and made. The object aimed at is to heat the syringe-water, keep syringe itself warm, heat hot-air syringe, soften gutta-percha, and keep mouth-mirrors warm, so that moisture will not condense upon them.

The apparatus as you see is very simple, consisting of a copper

plate two by six inches, on one side of which there is a Bunsen burner. Over this burner is a copper disk to catch the heat, which is then conveyed by the copper support to the plate below, and thence to the glass of water, and up the copper pedestal which supports the syringe. The mirrors rest on the copper plate. The gutta-percha is softened on a German-silver disk, placed for a moment on the heated copper disk. The warm-air syringe is heated by being placed in the copper tube support to the heating disk."

Clasps.

From an article in the *British Dental Journal*, by H. Rose we extract the following:—

"The slant of a tooth is often a serious obstacle to the effectiveness of a clasp, because the more it is tightened on the tooth the more it keeps the case from going into its place. Clasps should be made to act in conjunction with each other and also by themselves. As an illustration take a molar clasp which encircles the case, tightening the same would constitute an independent hold; the same may be said of a clasp around the second bicuspid, when the presence of gold on the buccal aspect of that tooth is not objected to. But where one has only the six front natural teeth in position, the clasps on each canine must act in conjunction with each other, and should encircle as much as possible of each tooth without unduly showing in the front of mouth. If these clasps are made too short then the case is pushed out of its place instead of holding it when the clasps are tightened."

EDITOR'S NOTES.

Prevailing Errors.

PERHAPS it is due more to carelessness than anything else that a number of errors are frequently made in the speech and writings of many dentists. A few days ago we read in one of the dental publications, about a dentist who performed a feat most wonderful, yet to his mind only a simple operation. You have all read and heard of similar operations. He took out several pieces of the *alveolus* after extraction of a tooth. As an *alveolus* is a socket or cavity in the process of the maxillary bone

in which the root of a tooth is fixed, is it not an extraordinary thing that anyone should be able to pull out a portion of this hole?

Of course the writer meant portions of the *alveolar-process* but what he said, in the light of correctness, was quite ludicrous. The two terms are frequently used as *synonymous*.

We often hear the word *fissure* used to designate a *groove* or *sulcus* in a tooth. Mark the difference:

A *Groove* is a long-shaped depression in the surface of a tooth.

A *Sulcus* is a long-shaped depression in the surface of a tooth the inclines of which meet at an angle.

A *Fissure* is a fault in the surface of a tooth caused by the imperfect joining of the enamel of the different lobes.

How often we hear or read of *nitrate* of amyl when there is no such drug. It is *nitrite* of amyl.

Comparatively few make any distinction between the words, *antiseptic* and *disinfectant*. An antiseptic is a substance which, by its presence, prevents the growth of bacteria without of necessity killing them.

A disinfectant not only kills all germs but destroys their spores as well so that there is no subsequent development.

A material may be an antiseptic without possessing disinfecting properties to any very high degree, but a disinfectant is always an antiseptic as well.

How often we hear the term *ulcerated* tooth, used for *abscessed* tooth. Is it necessary to define the difference? Abscess; a collection of pus or purulent matter in a cavity formed *within* some tissue or organ of the body as the result of suppuration.

Ulcer; an open sore on the external or internal *surface* of the body; a solution of continuity in the soft parts with loss of substance, etc.

Again, some say *bacilli* when they mean *bacteria*. A bacillus is simply one form of bacteria; a rod-shaped micro-organism.

And *ptomaines* are spoken of as the poisonous products of bacteria when they are not necessarily so. While some of them are highly poisonous others are wholly inert. *Toxine* is the word used to designate a poisonous ptomaine.

You will say there is nothing new in all this. We know that, and have made these suggestions merely to set you thinking whether you always use the proper words to convey your meaning to others.

New Publications.

BOOKS RECEIVED.

Catching's Compendium of Practical Dentistry, 1895. Price \$3.50. B. H. Catching, editor and publisher, Atlanta, Ga.

Dont's for Consumptives. By C. W. Ingraham, M.D., Binghamton, N. Y.

PAMPHLETS RECEIVED.

Transactions California State Dental Society 1895.

Transactions Illinois State Dental Society 1895.

SOCIETIES.**Present Secretaries of State Examining Boards.**

WE have frequent inquiries for names of Secretaries of Examining Boards, and here append a list which is taken from a list of "Boards of Examiners" just published by the National Association of Dental Examiners:

Alabama, T. P. Whitby, Selma; Arkansas, W. H. Marshall, Little Rock; Arizona, H. J. Jessop, Phoenix; California, J. D. Hodgen, San Francisco; Colorado, D. Murray, Greeley; Connecticut, G. L. Parmelee, Hartford; Delaware, T. H. Gilpin, Middletown; District of Columbia, Williams Donally, Washington; Florida, C. P. Carver, St. Augustine; Georgia, D. D. Atkinson, Brunswick; Illinois, L. L. Davis, Col. Mem'l. Bldg., Chicago; Indiana, M. H. Chappell, Knightstown; Iowa, F. P. Webber, Cherokee; Kansas, A. M. Callahan, Topeka; Kentucky, J. H. Baldwin, Louisville; Louisiana, L. D. Archinard, New Orleans; Maine, D. W. Fellows, Portland; Maryland, C. E. Duck, Mulberry St., Baltimore; Massachusetts, E. V. McLeod, New Bedford; Michigan, G. H. Mosher, Jackson; Mississippi, L. G. Nisbet, Alberdeen; Montana, W. E. Zuber, Helena; Nebraska, O. F. Lambertson, Lincoln; New Hampshire, E. B. Davis, Concord; New Jersey, G. C. Brown, Elizabeth; New Mexico, D. W. Manley, Santa Fe; New York, F. French, Rochester; North Carolina, J. F. Griffith, Salisbury; North Dakota, S. P. Johnson, Grand Forks; Ohio, James Silcott, Washington, C. H.; Oklahoma, D. A. Peoples, Guthrie; Oregon, E. G. Clark, Portland; Pennsylvania, J. C. Green, West Chester; Rhode Island, W. P. Church, Providence;

South Carolina, L. P. Dotterer, Charleston; Tennessee, H. E. Beach, Clarksville; Utah, S. A. Clawson, Salt Lake City; Virginia, J. V. Haller, Wycheville; Washington, P. H. Carlyon, Olympia; West Virginia, A. B. Van Osten, Clarksburg; Wisconsin, E. Palmer, LaCrosse.

Dental Society of Southwestern Michigan.

THE semi-annual meeting of the Dental Society of Southwestern Michigan, will be held at Niles, April 14th and 15th, 1896, at Hotel Niles.

An interesting program has been prepared, and a cordial invitation is extended to the profession in this and other states.

E. I. BACKUS, Secretary.

Illinois State Dental Society.

THE thirty-second annual meeting of the Illinois State Dental Society will be held in the Senate Chamber, Springfield, Ill., May 12th to 15th, 1896. The Executive committee has been especially fortunate in preparing a very interesting program. No member can afford to be absent. Dentists practicing in the state are cordially invited to attend, and if possible, to become members of the society. The profession outside of the state is always welcome at these meetings. The hotels and railroads have granted the usual reduction. Pay full fare in coming and take receipt therefor; this, when countersigned by the secretary, entitles the holder to return at one-third the usual fare.

LOUIS OTTOFY, Sec'y,
Masonic Temple, Chicago.

Mississippi Valley Dental Society.

THE fifty-first annual meeting will be held in the Ohio Dental College Building, Cincinnati, on April 15th and 16th, 1896. Members of the profession are cordially invited to attend.

THE OHIO DENTAL JOURNAL.

VOL. XVI.

MAY, 1896.

No. 5.

CONTRIBUTIONS.

A Method of Treating Fracture of the Inferior Maxilla.*

BY A. O. ROSS, M.D., D.D.S., COLUMBUS, O.

AFTER experimenting with a number of different kinds of splints and appliances, I am fully convinced that the old-fashioned inter-dental splint, and four-tailed bandage, which is used by many M.D.'s to-day, is not the thing, for the following reasons:

First—When the mouth is tied firmly shut, with a four-tailed bandage, it is then necessary for the patient to exist on soups and liquids, from three to four weeks, which he must take by means of a tube, through a space made by extracting a tooth, or back of the third molar.

Second—Providing the joint of the maxilla has been injured at the time of the fracture, there is great danger of complete or partial ankylosis, if the jaw is held in an immovable position for three or four weeks, the time required for an apparatus to be worn.

Third—It is impossible to keep the splint clean and free from odor, and the mouth healthy, when a bandage is used.

Fourth—One of the greatest objections, however, is the in-

*Read before the Union Dental Meeting, Pittsburg, Jan. 1896.

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convenience of vomiting when the mouth is tied shut. Frequently patients become very sick at the stomach, and vomit freely. If the four-tailed, or any other bandage of a similar kind is used, they will burst it loose and displace the fracture, if there is any tendency to displacement.

The next point is, "How shall we overcome these objections?" In reply I will say, by using the swaged metallic inter-dental splint that is held in position by cement, and bandages running underneath the jaw and permitting free use of the same.

In treating a fracture of the inferior maxilla, the first point is to properly diagnose the case and locate the fracture or fractures, if there is more than one.

I will presume that the fracture is between the left lateral incisor and cuspid, extending diagonally across the jaw toward the left side, with a decided tendency to displacement, owing to muscular contraction. The diagnosis being made, proceed to take an impression of the parts in the following manner:

First—Have the patient close the mouth naturally, see that the back teeth are together, and the teeth at the point of the fracture are in their natural, normal, position. If the articulation or occlusion is perfect, the jaw, as a rule, will be in perfect adjustment. Have the patient sit in a natural position, with the head thrown neither back nor forward, but natural. I emphasize this point, for the future comfort of the patient depends upon getting the lower splint to fit properly when the head is in a natural position.

With plaster of Paris or modelling compound, take an impression of the lower jaw on the outside. The impression should extend from angle to angle, the upper edge should follow a line drawn from the angle of the jaw to a point midway between the margin of the gums and the lower point of the chin. The lower margin should extend well under the body of the jaw, care being taken not to allow it to rest against the thyroid cartilage or it will in a short time cause the patient a great deal of discomfort every time he swallows or moves the jaw.

This impression serves as the permanent lower splint, also serves to hold the jaw in position while the impression of the lower teeth is taken in modelling compound, which should be allowed to set quite hard, before removing, to avoid dragging of the impression. From this impression, make a good heavy plaster

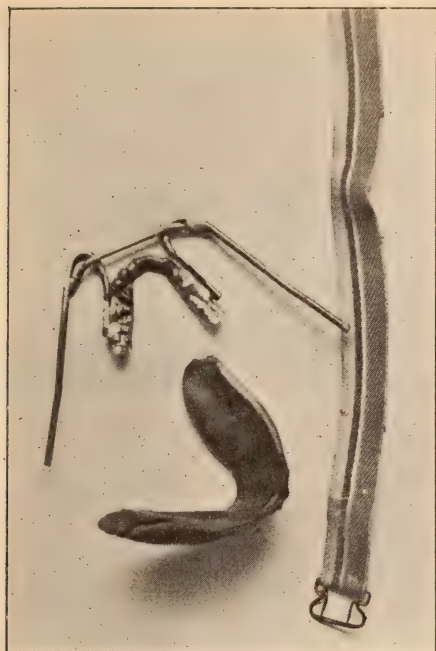


Fig. 1.

Upper swaged metallic splint.

Lower plaster or modelling composition splint.

Bandage with buckle.

ready, swage a silver plate 26 gauge to fit the die, and trim the edges on a line with the gum margins. To each of the buccal sides of this plate, and well down to the edge, so that the upper teeth will not touch when the mouth is closed, solder a German silver wire 6 inches long and 3-16 inches in diameter, bent in such a manner that it will turn back where it comes from the corner of the mouth, and point toward the lower part of the ear, and come within $\frac{1}{4}$ inch of the cheek.

At this bend, solder another wire of the same diameter, extending across in front of the lips, to act as a brace to keep the first wires from twisting off the plate when the bandages are put on. After polishing the splint, it is ready to set.

Brush the teeth well, remove all clotted blood and debris, and set the splint with some good cement, just the same as a bridge, except as soon as a splint is in place, have the patient

model of the lower teeth, and, if they are not in their proper position at the point of fracture, with a fine saw cut the model in two, at this point, and articulate the pieces to a model of the upper jaw or teeth. When in proper position, stick the ends together with sticky wax. This will give a true model of the lower jaw. Take this model, and with common beeswax, build up to the gum margin, all around and varnish with any varnish that will make a smooth hard surface. After dusting this well with soapstone, make a sand mould and reproduce in zinc. From the zinc die, make a lead counter-die. The die and counter-die being

close the mouth tightly and keep it closed until the lower splint is in position, and bandage by taking two pieces of ordinary suspender web about 18 inches long, with a common buckle sewed on one end, and passing from one horn of the splint, under the chin to the other horn, and back, buckling the same comfortably tight. With some adhesive, stick the bandages to the lower splint, that they may not become displaced; slip a little pocket over the horns of the upper splint, and pin the bandages to keep them from slipping forward. This all done, and the cement hard, have the patient open the mouth then remove all surplus cement.

The illustration, Fig. 2, shows the apparatus in position.

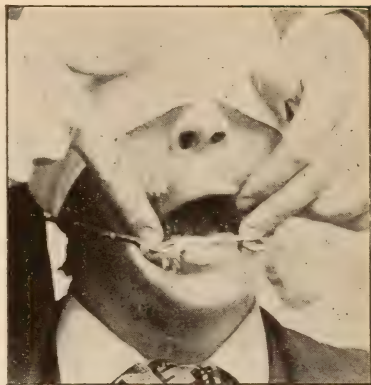


Fig. 2.
Upper splint in position without cement or bandages.



Fig. 3.

Apparatus as it appears when set.
Upper splint cemented in place.
Lower splint lined with cotton and bandaged to the horns of upper splint.
ing; no loss of weight on account of inability to eat.

The advantages of this method are as follows:

With dilute listerine it can be kept perfectly clean and pure, as cement leaves no pockets for debris to collect; in event of swelling, the bandage can be very easily unbuckled, gives the patient free use of jaw, removing all danger of ankylosis; no irritation of teeth or gums; the articulation, or occlusion being perfect, the upper teeth do not get sore; having free use of the jaw, the patient can eat anything that he desires, also throw it up if it does not agree with the stomach, without the least danger of choking.

I have said nothing about banding the teeth on each side of the fracture, or lacing them together with wire, or wiring the jaw, as well as several other methods, but will leave them and their merits to be discussed by the society. Having said that the method given has been the most successful of any in my hands, I submit this paper for your consideration.

Cataphoresis.

BY H. L. AMBLER, D.D.S., M.D., CLEVELAND, OHIO.

THE dentist has been accustomed to using drugs which he could see, and the actions of many of them were also visible, but if he cannot see electricity, and still can obtain an understanding of its therapeutic value, then he will not be opposed to using it. What he wants is to be able to apply in a practical way, this immaterial agent to the treatment of ease or disease. All physical phenomena are recognized as those of motion, and the causes of these motions are forces. Electricity is probably molecular motion, and also a force of nature, and its manifestation under the name of cataphoresis, or electrical osmosis, will play an important part in the dentist's armamentarium. The success attained, and the benefit which may be derived from the use of cataphoresis, like all other therapeutical agents, depends to a great extent on the manner in which this particular method may be employed. The way of using it can be better comprehended by a knowledge of its practical application, and a description of the methods used for treating different dental lesions. The recombinations of the two kinds of electrical force, when brought together combine by some manifestation of energy, which may not always be apparent to the sight. The resistance of tissue to electro chemical action, is inversely to the proportion of fluids which the tissue contains. Thus dense tissue is a feeble conductor, it offers a large amount of resistance. If the non-abraded cutaneous surface of the body be represented by one thousand, then the denuded surface would be represented by six hundred and sixty-six and two-thirds; thus by denuding the surface the resistance to the passage of the electrical current has been reduced one-third. Again, if metallic electrodes are applied to the dry skin, the current passes with

difficulty through the circuit of the body, but if you wet the skin, then the current passes much easier.

The relative conducting property of the various tissues of the body, the best conductor being placed first in the list, viz.: blood, nerve, muscle, cartilage, bone, dentine and enamel. Taking silver at one thousand as the best conductor of electricity, then on the same scale normal dentine would be fifteen. Thus showing that in cataphorizing dentine, we have a poor conductor, as well as a dense one, to be acted upon. This might place us at a disadvantage, as compared to the surgeon who applies the process to the soft tissues by the ordinary method, if it was not for the fact that we have in the Wheeler Selector, a scientific instrument which controls and adapts the current in very small electrical doses to our special need. A crude apparatus, controlled by a water rheostat very often causes pain from electric shocks, as a sudden increase of half a volt will cause pain in living dentine, and in some cases experimented upon with poor appliances, the optic nerve has been affected to such an extent, that patients "saw stars" and flashes of light, thus refusing to have such appliances used on them again.

What we must have for cataphoric work, is a device which will hold in *abeyance* the pressure of the current, without decreasing its working strength, this is what the Selector accomplishes, and it presents, as the limit of the strength of the current for work upon the patient, from 1-160 to 250 milliamperes, which is sufficient for dental, medical or surgical work. From our experience with it, we should say: that the method of manipulation is not complicated, and a person of good intelligence can soon learn to use it successfully. In grinding or cutting down live teeth preparatory to crowning, we offer cataphoresis as a desirable assistant. In some cases alveolar abscess may be aborted, viz. equal parts of tincture of aconite and iodine mixed, to which is added a trace of water in which a small amount of sodium chlorid has been dissolved; apply sponge electrode to the face wind a pellet of cotton onto the platinum electrode and apply it to the gingiva over the affected tooth, turn on from two to five volts, for three to five minutes, repeat in one or two days, according to indications; great length of time or high voltage will produce a blister. If we do not drive away the inflammation "per se," we assist in destroying the products. Experience will re-

veal to us, when to make use of electricity as a curative agent. "We should seek to employ it as a mechanic uses steam, remembering that the very power which it possesses, makes it useful only when restrained and controlled by discretion."

So it is plain, that it is important for us to have a proper battery, current, and current controller, which will be appropriate to the results we desire to obtain.

For years, nitrate of silver in solution with alcohol or water, has been used in the temporary teeth where superficial decay has taken place, in order to prevent further decay and preserve the teeth until the permanent ones replace them; it has also been used in cases of erosion at the necks of permanent teeth where the smooth groove was of less or greater extent; also used on the occlusal surface of bicusps and molars where the enamel has been entirely worn away, leaving the tooth very sensitive to thermal changes and masticating pressure. It is well known that when applied to dentine, that it produces an obtunding effect, and returning sensitiveness only comes when the silver stain is worn away; it penetrates the tubuli destroying bacteria, if there are any, and seals up the tubuli, keeping the tooth surface in an aseptic condition, largely preventing further destruction of substance. It acts on the organic portion of the dentine destroying its vitality to the extent of the combination which takes place, and by the decomposition of a part of the salt and the consequent liberation of a part of its acid, it also acts slightly on the inorganic portion. The compound formed by the nitrate with the organic portions is insoluble, except in a few substances, and therefore protects the underlying parts, and the precipitation of the reduced oxids on the surface affords some additional protection; its use will not endanger the pulp, unless the intervening portion of dentine be so thin that it is all required in the chemical union which takes place; to obviate all danger, the pulp could be capped before the remedy is applied. If silver nitrate prevents further decay, and erosion, when exposed to the fluids of the mouth, why is it not a good plan, in cavities where amalgam is to be used, and there would be discoloration anyway, to apply the nitrate sufficiently to close up the tubuli with an insoluble compound, before inserting the filling? May we not expect that amalgam fillings will last longer when cavities are treated as suggested?

The *cataphoric* method of applying silver nitrate with the

Wheeler Selector (which is also used for obtunding sensitive dentine) viz: Take about equal parts, in bulk, silver nitrate and soda sulphate, pulverized and mixed together on glass or porcelain, add only water enough to dissolve; dip a pellet of cotton in the solution and place it in the cavity, and apply to it the platinum electrode, the negative electrode being placed at any convenient point on the face; turn on the voltage until the patient feels the pressure, which will soon subside, then a few more volts may be gradually added; hold the electrode quietly in the cavity and as soon as the dentine turns green, cataphoresis has been accomplished; when exposed to the action of water, saliva or light, the green changes to brown, and then black. A live tooth will bear from three to fifteen volts, and from two up to five minutes will be sufficient to produce the effect. In a pulpless tooth, the voltage can be carried higher, thus less time will be consumed. If the electrode is held in place long enough, and the solution occasionally renewed, then the color finally becomes black. The cavity should be excavated before the solution is applied, and should be allowed to dry out after the application has been made, then it is ready for filling. While the cavity is still damp from the solution, if you touch any part of it with a steel instrument, it becomes black instantaneously. Applied cataphorically, silver nitrate acts more quickly, and penetrates more deeply, than when used in the ordinary manner.

When applied to erosion at the cervical portion of a tooth, proceed viz.; put on the rubber, hold it out of the way with a piece of gold or platinum plate, cut to fit the tooth, placed in a convenient holder; dehydrate the surface for one or two minutes, with absolute alcohol, wind a very small pellet of cotton onto the point of the platinum electrode, dip it into the solution and proceed as in case of a cavity. The operation can be made without the rubber, but remember that your remedy is an active caustic.

Use only enough solution to saturate the pellet, do not let it run over the tooth, because wherever it flows you will have some discoloration. It generally takes a higher voltage and more time in cases of erosion, than in cavities, as the remedy does not penetrate the smooth glassy surface, as rapidly as a cut or broken surface.

Solila.

BY HERMAN PRINZ, HALLE, GER.

THIS new form of gold has been recently introduced by Dr. E. DeTrey of Basle, Switzerland, and has awakened much interest in the dental profession. Dr. Röse in Munich, Germany, made some experiments with it and came to the following conclusions regarding its use: Solila will not create a new era in gold filling. It is a sponge gold but it has that remarkable property of welding in a most pronounced degree, and all those of our profession who are used to work with hand-pressure will undoubtedly admire this new gold. But right here I will warn against one grave error. The handling of this gold is not a mere play-thing and the idea that it is equal in its working property so amalgam, as claimed by Dr. DeTrey, is just as faulty as Dr. Herbst's claims for his rotation method. The use of the mallet and fine pointed smooth pluggers around the corners, must be accurate and only thin pieces should be used. For countour-filling it is not desirable. The best results are obtained in large crown cavities of molars, where from ease of insertion large pieces and broad pluggers can be used. The great welding property of this new gold is probably due to the very fine crystals which are easily driven in the rough surface of the cavity, using this roughness as a retaining form. Of all known preparations of gold for filling teeth, this new form, "Solila" will give by equal time and labor the best adaptation to the walls of the cavity and the greatest density.

Failures I have Seen and Made in Crown- and Bridge-Work.*

BY C. G. MYERS, D.D.S., CLEVELAND.

WE should learn by our failures, and it is with this thought in view that I present to you some of the failures I have met with in the past few years, both in my own practice and that of others. Since its introduction, crown- and bridge-work has suffered the rankest kind of abuse and it is no wonder that it is

*A paper read at the Cleveland Dental Society, January, 1896.

condemned both by dentists and patients. Failures have not always resulted from careless work, but have occurred where the principles as outlined by our most expert workmen in this line have been carried out to the letter. It is certainly embarrassing, to say the least to have our work, on which we have placed so much reliance and which we considered a "thing of beauty and a joy forever" returned to us after a few months in a hopeless state of collapse. I am not so sanguine as I was at one time, as to the success of crown- and bridge-work. I believe it is indicated in certain places and under certain conditions, but there are others where at one time I considered it "*sine qua non*" but much to my sorrow and discredit it has proven to the contrary. Bridge-work in those places where it is indicated and where it has been properly constructed is of inestimable value, but we too often count on a piece of work being a success without a proper appreciation of what is to be the mission of that work if the patient lives a reasonable length of time and I am afraid there are those among us who would mourn with very poor grace should some of our patients meet with untimely ends. The natural teeth in their beautiful arrangement in the arch are supported by one another. The point of contact being a single point near the cutting or grinding surface of the tooth. The object of this is to help support the tooth in its socket, also to prevent lodgment of food between the teeth and to prevent the crowding of food upon the tender gums. In how many cases where crowns are inserted do we find this wise provision of nature carried out? The contouring of crowns with contouring pliers and other contouring devices is merely a matter of guess work and failures are occurring in great numbers due to a lack of appreciation of the one very important point of a correct knuckling. The failures due to an imperfect fit of the band of the crown at the neck of the tooth are numberless and need scarcely be commented on. Suffice to say conservatism of tooth structure and crown-work do not go hand in hand. I believe that only in very rare cases can teeth with living pulps be perfectly crowned. One of the first cases of bridge-work to give me a shaking up was a bridge carrying at one end two suspended dummies, a bicuspid and molar. After a few months wear the dummies broke off and the solder appeared to have been strong enough to have stood any strain. I had heard of saddles being swedged to fit a portion of the arch and

used as supports. I removed the bridge which was quite an extensive one and reattached the dummies, using the saddle arrangement to support them. Result: A few months more wear, absorption of alveolar process due to pressure of saddle. A breakage between cuspid, which was one of the abutments and main portion of bridge and the bringing away of the cuspid root with the broken section. Final result: I use no more suspended dummies or saddles. I can testify that others have had similar, if not worse accidents due to too much confidence in these suspended dummies and saddles. It simply means one of two things in the end. There will be a breakage of the entire bridge or the teeth will be loosened. One of the most common mistakes in bridge-work is that of crowning one tooth and suspending one from it. I am referring to those cases where the work is brought into actual use and not to those used only for show and are subjected to no strain. There may be a few cases where such work may serve a good purpose. But the failures I have had and seen have led me to abandon this practice. I never insert a bridge without two abutments. I have used very few bands as attachments in bridge-work and if my patients will forgive me, I will use them no more. Too many of the crowns used as attachments are too weak to stand the stress of mastication and numerous failures, from this cause have resulted. The crown springs away from the tooth and allows the secretions to take the place of the cement between the band and the tooth, and it frequently occurs that a section of the crown is broken out. It is a serious mistake to let the crowns extend too far beneath the gums or to allow the dummies to overlap and impinge on the gums. Too often an ulcerated condition of the gums results that is only checked by the removal of the bridge. There was a time when I relied on ready made dies and die plates for swedging the cusps used in the construction of crowns and bridges. But for various reasons I have discarded them altogether and make dies for each individual case as presented. On a correct articulation, depends, in the greatest degree, the stability and usefulness of crown- and bridge-work and it is one of the most important features in connection with this work. I have had some very disastrous failures which were due to a want of appreciation of the importance of this point or to a lack of skill in carrying it out. From what I have observed there has not been the attention paid to correct articu-

lation in crown- and bridge-work that it deserved. How any one can expect to meet all the different forms and conditions that are required in correctly articulating a rigid denture of this description, with a few prettily formed dies, is something I can not understand. But I can understand why failures have occurred in an attempt to do so. Quite a prominent dentist of my acquaintance, had made at considerable trouble and expense, a collection of several hundred dies from as perfect teeth as he could procure, thinking in this way he would meet all the requirements at a great saving of time. They were in use but a short time when the entire lot were thrown away. A correct articulation is of much greater importance in bridge-work than in plate-work because where the plate may accommodate itself to some slight inaccuracies, the bridge being unyielding receives the entire strain. The question is often asked me. "Would you sacrifice a perfectly sound tooth to use it as an attachment for a bridge?" My answer is that where a bridge is indicated, I will use any tooth as a support that will increase or ensure its stability. I will no more hesitate to do this than I will to break down all frail walls of a cavity when inserting a filling so as to insure more permanent work. Bands are too frequently used as attachments for bridge-work with the mistaken idea that we are preserving tooth structure when in the majority of cases we are not only dooming the tooth so banded to destruction, but are placing the work in jeopardy. I had at one time, quite a collection of crowns and bridges that had proven failures and a careful study of these would show that they were with hardly an exception, failures even before they were placed in position in the mouth. When I recall the different failures I have made, I can readily see why they should have been so. The most surprising thing is that failures should not have been of more frequent occurrence.

Some Things that are Being Done.

L. P. HASKELL, CHICAGO.

FEW dentists are aware of the work that is being done by Dr. W. J. Younger of San Francisco. He has originated and is successfully accomplishing some of the most important advances

in dental surgery. Having had the opportunity here this winter and in San Francisco last June, of witnessing his operations, I have been surprised and delighted at what I have seen.

He came to Chicago in November and remained three weeks. Thence went to New York for three weeks, returning here, where he has been for six weeks. Coming here a stranger, except to the dental profession, with no mention of his name even in the daily papers, he has constantly been engaged at the Hotel Richelieu, confining his attention to specialties of implantation treatment of pyorrhea, correction of irregularities in adults by use of the silk ligature and artistic trimming of ill-shapen teeth, or what might well be termed Artistic Dental Surgery.

The implantation of teeth, originated by him ten years ago has proved in his hands an unqualified success. He has implanted from one to six in the mouths of at least twenty patients since coming here.

In the treatment of pyorrhea in its worst forms he has for many years made a complete success, depending solely upon the complete removal of every particle of the deposit from the roots, and this depends upon an absolute delicacy of touch, which is able to feel every bit of deposit. He then gives but one treatment of lactic acid and fastens the teeth firmly with silk ligatures, or in case of a number of teeth together, swages a plate of gold and ties it to the teeth.

In the treatment of irregularities he originated the use exclusively of the silk ligature, and I have seen some of the worst cases thus treated, the teeth being placed in most perfect symmetry and retained them. He seems to make no limit of age in this work.

In the remodeling of ill-shapen teeth, he manifests the most artistic taste, inserting inlays of natural teeth and accomplishes some wonderful effects, that need to be seen in order to fully appreciate.

Dr. Younger is a genial man handling his patients, as one remarked to me, "as gentle as a woman." His delicacy of touch and deftness of manipulation is very marked. It is worth going a long distance to witness his tying of ligatures. He is usually humming some snatches of song while at work. In severe operations he uses cocain, administered through a special menstrum of his own device. He returns to San Francisco shortly to meet by

appointment long since made, patients from Australia, and will return to Chicago in April.

The four specialties mentioned above place him at the head of the progressive men in the profession.

A Method of Strengthening Partial Lower Plates.

BY W. H. BROWN, NASHVILLE, TENN.

WE all know what a difficult matter it is to make a strong partial lower plate in certain cases where it extends around in front.

I have for three or four years been using a small platinum wire, or, if the price we sometimes get is not sufficient to justify, a German silver wire will do, as it is covered with rubber.

Prepare the plate as follows: Wax up and invest in the usual way, remove the wax then before packing, take a wire sufficiently strong to suit the case, being governed by length of space, bend with a pair of round nose pliers to fit close up to the model all the way around, letting each end extend about a half inch past the first tooth to be inserted. After you have fitted the wire accurately warm your flask and proceed to clip your rubber into small pieces, pour a little chloroform into any small vessel, place the wire in position and proceed to pack the plate in the usual way, using the chloroform to dampen the rubber so as to make it stick to the model and in that way there is no danger in dislodging the wire. If care is taken in fitting the wire it will not show through when the plate is finished and you will have a strong light plate.

Dental Vulcanite.*

BY W. STORER HOW, D.D.S., PHILADELPHIA, PA.

STEEL is hardened by heating it to redness and plunging it in water; it is then gradually heated to produce the desired temper-color. The process is so apparently simple that almost any one

*Read at Mississippi Valley Dental Society, April, 1896.

can do it; yet long experience and a high degree of skill are required to properly harden and temper steel.

The vulcanizing process is likewise a simple one, but the production of good dental vulcanite is very unusual, because the art in its seeming simplicity is commonly deemed to require but little thought or skill. It is, however, a great mistake to jump to that conclusion, for the making of a fine, strong, solid, odorless vulcanite denture demands careful, intelligent attention in many essential details.

The plaster model should be smooth and hard. The waxing up is to be done neatly and of the right thinness for the vault-part, with a judicious thickness of the ridge and gum parts which are commonly much too thick. They therefore get unequally vulcanized, as the thin parts and thick parts will not evenly harden at the same high heat in the same short time. This is a fundamental fact of the first importance, and its general neglect accounts for the porous malodorous dentures so often seen and smelt.

A large flask (the Griswold is the largest and best) should be chosen, and with thick-mixed plaster, free from bubbles, the model

FIG. 1.

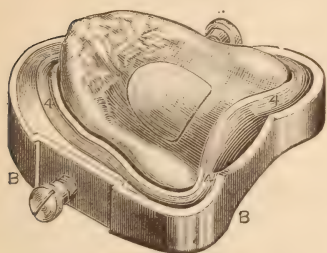


FIG. 2.



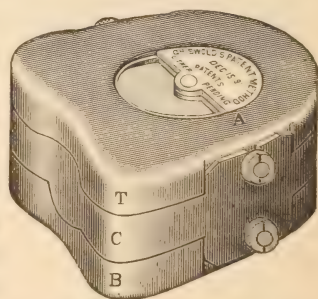
is set at an angle, as in Fig. 1, to insure safety to an overhanging anterior ridge, making the parting line along the waxed gum border. Shellac varnish the smooth plaster investment, and when dried oil that parting surface and pour thick mixed plaster for the mold, jarring the flask to drive the plaster over all the teeth and wax surfaces. Warm the flask and allow time for the heat to reach and soften the wax, so that the teeth will not be dislodged on separating the flask. Remove the wax and pour boiling water over the model and mold, to melt and wash out the remaining wax. Then

with alcohol and a camel's hair pencil brush the exposed teeth and pin surfaces to dissolve the wax or water film, which otherwise will prevent adhesion of the vulcanite; and here is disclosed a common cause of loose teeth, the breaking of unsupported teeth, and of foul plates. That film also prevents a close fit of the cement stopping of section-joints, and allows the vulcanite to flow between the cement and the sections to make a dirty joint. To provide for the surplus rubber a deep circular groove is cut in the mold-part, leaving a narrow rim between the model and the groove, as 4, Fig. 1; also shown in Fig. 2. This allows a free flow of the rubber until the flask is nearly closed, when the flow is checked by the narrow rim, and then the increased pressure distributed over the inclosed rubber drives it into every part of the mold and increases the density of the resulting vulcanite.

It is best to shellac varnish the model and mold (taking great care to keep the varnish from the teeth), and when the shellac dries sticky, burnish tin-foil over both model and mold, using a keen-edged knife to cut the foil close around the teeth. This work nicely done will, on stripping off the foil after vulcanization, leave a dense smooth surface, needing very little finishing work. More than that, the surface will be hard and very resistant to the penetration of the oral fluids, or the retention of salivary or alimentary deposits.

A novel and important function of the Griswold flask, Fig. 3, peculiarly adapts it for flasking cases wherein the gum-sections or single teeth have been arranged or ground to fit directly upon the ridge of the model. It is obvious that if the parting line is made between the two parts of the common flask in the usual way, leaving the teeth in the mold-part as shown in Fig. 4, a complete closure of the flask will probably fracture the thin gum of the section (or the thin neck of the plain tooth) by contact with the ridge of the model. If the flask is not quite closed, then the bite will be lengthened or disarranged. But by locking together the base-part B and center C, Fig. 3, the model A and waxed-up teeth B, Fig. 5, can be set in that deep flask, so that the investing plaster D shall cover the top of the teeth and make the parting

FIG. 3.



line at the edge of the center-part C. Then the flask top T may be locked onto the center C, Fig. 5, and plaster poured through the half-round opening on to the shellacked and oiled parting surface to

FIG. 4.

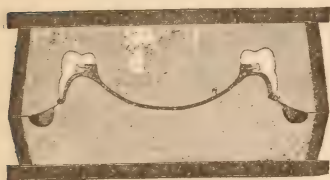
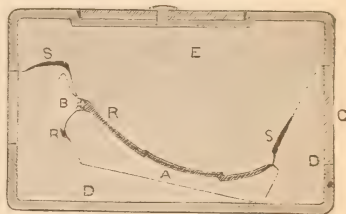


FIG. 5.



form the mold part E. This subsequently serves as a plunger to drive the rubber R, R, into every crevice around the teeth. The grooves for the surplus S, S, should be deeper and nearer the teeth than shown in the sectional view, Fig. 5.

In packing the rubber, there is opportunity for both judgment and skill in cutting suitable pieces, keeping these and the flask-parts warm, clean, and packing the pieces in close contact without muce excess of material. The surplus groove should, however, be ample to allow the complete closure of the flask after immersion in very hot water, followed by strong screw pressure. The closed flask should be securely locked to retain the valuable compressive action for making the vulcanite base dense.

A rubber of well-known purity, strength, color, and vulcanizing heat period is always to be used, but it is a very important fact that the proper heat and time limits are to be varied in accordance with the differing thickness of the several portions of the case in hand; the best results being generally attained by a gradually raised and a finally sustained low and long heat. For instance, with a rubber scheduled for one hour at 320° F., a large denture having thin palatal with thick ridge and lip portions will properly require a gradually rising preliminary heat of full forty minutes, and a final period of an hour and a half at 310°F. The surprising excellence of the hard and tough product will well repay the extra expenditure of time and care.

If found necessary (as it seldom should be) to do considerable filing and scraping in finishing such a denture, no holes and stench-traps will be found in that vulcanite, because intelligent provision has been made for the slow and certain interstitial evo-

lution and elimination of the sulfuretted hydrogen which is often confined within the vulcanite skin to form the foul pores and pockets resulting from the commonly crude and quick process.

A first-class automatically regulated vulcanizer is preferable, and the best can be none too good, considering the professional work to be done. In any case the vulcanizer should be steam-tight, then water a quarter of an inch deep will be sufficient, and will not boil into the flask to soften the plaster and otherwise cause injury to the vulcanite.

To Obtain the Best Results from Adhesive Plates.

BY JOSEPH SPYER, D.D.S., NEW YORK.

HAVING received many letters requesting information and instruction of the best manner of using my adhesive, plates in order to obtain the most satisfactory results, I would say that it is absolutely necessary to use the *screw press* and to have the rubber *perfectly smooth and even* before putting on the adhesive plate, which should be properly trimmed, and put on the rubber cold, *not* covering the alveolar ridge, only coming up to it. After the adhesive plate is laid on the rubber, do not heat the flask nor warm the adhesive plate. Simply lay the adhesive plate on the rubber, close the flask, put in bolts, screw up *cold*, and vulcanize.

The Exemplification of Principles in Technics.*

BY THOMAS E. WEEKS, D.D.S., MINNEAPOLIS, MINN.

IN the evolution of the science of dentistry, the tendency seems to have been to determine principles through the teaching of methods. Methods which promised success were pursued by their devotees until their weaknesses were proven by long experience. Even in this advanced day there are many who pursue methods without seeming to understand the principles which seem to underlie and govern them. The possession of a high degree of

*Read before the Union Dental Meeting, Pittsburg, January, 1896.

mechanical skill has been given undue importance and has stamped its possessor as a first class dentist, although he may have been utterly lacking in that fundamental education which is to-day recognized as absolutely necessary.

In the past when a young man desiring to enter upon the study of dentistry he applied to some dental friend or acquaintance, was asked if he possessed mechanical ability, if as a boy he had shown constructive ability, and if the answer was in the affirmative, he was apprenticed without further question. In those earlier days of our profession, before the introduction of vulcanite bases for artificial dentures and plastic material for the filling of teeth, it was necessary for the dentist to possess superior ability in the manipulation of the metals, ability obtained through a long apprenticeship to men of experience.

The very nature of the metals employed made it difficult to perform operations or to construct dentures without a knowledge of the properties and peculiarities of the metals used. The peculiarities of the vegetable bases and the plastic materials, the comparative ease of their manipulation together with their cheapness, largely broadened the field of dentistry and attracted to its ranks many men who did not take the trouble to learn the properties of the noble metals and acquire the skill necessary for their manipulation. In time, however, it became apparent that cheaper materials had their place and that an honorable one; but to achieve their greatest usefulness, their properties and manipulation must be understood; and an equal degree of skill, though of a different kind, was necessary.

It was early apparent to the leaders of our profession that knowledge of the anatomy, physiology, and pathology of the dental organs and the associate parts was absolutely necessary, and colleges were founded in which these branches were taught and in which opportunity was afforded for the acquirement of the mechanical skill necessary for the manipulation of the materials used. It is not imperative for us to follow the evolution of these colleges from their infancy, when only those who appreciated the full value of an education and who took up the practice of dentistry as a profession rather than as a business, availed themselves of the instruction afforded, up to the present time when nearly all the states in the union and most foreign countries demand a diploma as primary evidence of fitness to practice dentistry.

Neither will we do more than to recall the fact that the first apparent recognition of the manual training idea in dental colleges was in 1888, when the first classes in dental technics was organized. In these classes systematic courses in manual training were pursued.

Without giving a history of dental technics we will consider the principles which underlie it, starting with the simple premise that it is necessary that the student have an accurate knowledge of the organs upon which he is to operate. He must be familiar with the formation, the offices, the structure, and the physical character of the teeth, with their individual forms and markings, and their relation to each other in the dental arches; he must have a knowledge of the diseases to which they are subject, especially those diseases which result in the loss of any of their substance; he must have a knowledge of the properties, characteristics, and preparation of the materials employed in conservative operations and an equal knowledge of the materials employed in those operations which have for their object the replacement of dental organs when lost.

We do not mean to presume that these things were not taught by the colleges before the introduction of dental technics; but we do believe they may be acquired with more facility through manual training methods than in any other way. That this view is shared by the leading educators of the country is proven by the number of colleges which have established technic classes; it is further evidenced by the action of the National Board of Dental Examiners last summer that no college not having facilities for manual training should thereafter be acknowledged by them. So rapid has been the movement that there is already danger of the pendulum swinging to the other extreme; the true object of manual training may be overlooked and its benefits greatly modified. As expressed in a previous article, "Simultaneous training of the mind, the eye, and the hand is the underlying principle of the various systems of manual training,—to which the teaching of technics in dental colleges is analagous." If the operation which the student performs with the hand does not convey through the eye to the mind its full significance, then the whole proceeding is a failure. To require the student to draw or model the images of teeth, to dissect them with saw or file and to record in his printing book silhouettes of

such dissections, without conveying to his mind the facts they are designed to teach, is to uselessly consume his time and fail in obtaining the result desired.

To make our ideas more comprehensible, let us consider what object is to be attained in the several operations of dental technics; the course in operative technics requires the student to begin with dental anatomy; in Prof. Black's excellent work, which to the writer, seems to be the pioneer of dental text books, we have a book, which, by study and recitation, will give the student a fair knowledge of dental anatomy; and yet the author himself plainly indicates that the book must be supplemented by some systematic work in order that the necessary knowledge be acquired. After familiarizing the student with the terminology, and nomenclature of the teeth, and giving him a general knowledge of the number, size, and characteristics, the author prescribes that the student shall supplement his text by the careful study of the teeth themselves,—by handling, observing and noting the individual characteristics of each tooth, calling the attention meanwhile to the significance of the markings of these surfaces, and in some instances requiring the student to make in clay, heroic imitations of the tooth. If the operations in this study are performed perfunctorily, the teacher failing to impress the student with the connection between these operations and those conservative operations to be performed later, the student's mind will not have been instructed through the eye by the operation of the hand; this illustration may be applied through the whole range of operations in technics.

The operation of dissecting the teeth and printing the silhouettes from the section thus formed should not only familiarize the student with the outline of the teeth, the size, form, and location of the pulp chambers and canals, the comparative thickness and form of the enamel, but should give to his mind keen appreciation of the difference of the physical character of the enamel and the dentine. Every operation in the technic of dental anatomy should be so skillfully chosen that with little explanation by the teacher, the ideas conveyed by the text book shall be indelibly engraved upon the student's mind.

In the technic of the operations for the conservation of teeth, the work consists of preparing cavities, cleaning and filling pulp chambers and canals, and the rest of the work usual in the tech-

nic laboratory before he is allowed to perform these operations for the patient. Here again the student must not be permitted to perform any part of these operations without a thorough knowledge of their significance and the principles which govern them. It is not enough that he prepares a cavity which affords a firm seat for the filling, he must know *why* he so prepares it; it is not enough that he establishes the boundaries of the cavities in sound tooth substance and extends his margins beyond the contact points, he must know *why* he does it. He may give his enamel margins the proper bevel, but if he does not thoroughly appreciate the reason *why* he does so, he does no more than a machine. He may prepare and insert a filling material exactly as he is taught, but unless his mind appreciates why he does so prepare and insert it, the lesson has failed of the desired instruction.

In prosthetic technics, each step while familiarizing the student with the nature and manipulation of the material employed, should at the same time enforce some point in the principles which govern the construction of artificial dentures.

In crown and bridge and orthodontia technics, the same course should be pursued, teaching the principles at the same time with the methods.

While the courses in technics are planned and executed by those engaged in teaching, the students come from the offices of the rank and file of the profession. For this reason it is important that the practitioner should have sufficient interest in the methods employed to place him in that position of helpful sympathy which will result in mutual good to all.

Address.*

BY DR. J. G. TEMPLETON, PITTSBURG.

AFTER cordially welcoming the dentists to the city of Pittsburgh, Dr. Templeton said:

.... Of the two factors heredity and environment we will not now discuss their relative importance. While the former may claim the main influence we are in practice chiefly concerned

*Abstract of address at Union Dental Meeting, Pittsburgh, January, 1896.

with the latter. What heredity has accomplished for us has been outside ourselves, for no one can choose his own parents. But every one can, to some extent choose his own environment. His relation thereto being influenced by heredity is subject to alteration, hence his control over environment and its influence over him is so great that he can undo, modify, or perpetuate the earlier hereditary influences.

We can enlarge our environment by studying nature, observing her methods and her laws, thus obtaining food for reflection. Observation is the lever, and reflection the fulcrum that moves the world. The combination turns the heroic practice of dentistry into the conservative, until we save the natural teeth by the same secret power that the Creator exerts in producing them. Next to nature is the association and the convention. We arrive at truths in talks and discussions more readily than by reading. The charm of oratory, the exhibition of appliances and clinical illustration fixes things permanently in our minds and we find our environment increasing.

There are obstacles and obstructions in every profession, one of the greatest being professional jealousy, which is a crooked road leading through by-ways of deceit and over filthy marshes of dissimulation to the uneasy seat of malice and hatred.

This hydra-headed monster, I am happy to say, is very largely subdued by our associations for advancement and mutual improvement.

A Report of Two Cases of Neuralgia of the Second Branch of the Fifth Nerve—Excision—Relief.*

BY WILLIAM H. HAMILTON, M.D., COLUMBUS, O.

Tic doloureux is a very painful affection. It most frequently involves the second division of the trifacial. As the disease may affect all the branches, and more particularly the two lower, it is a condition the discussion of which may be pertinent in a society of dentists.

The etiology and pathology are vague. There is no doubt as to the severity of the sufferings which it may entail. The fact

*Read at Ohio State Dental Society, Dec., 1895.

that it is frequently found in subjects whose constitutional condition is very low is suggestive. May it not in a proportion of cases be a species of neuritis in physical bankrupts; in other words a vice of impaired nutrition. If a patient should lose flesh and strength, and should become anæmic, so that there is from any cause, decided impairment of the general health, that fact makes him the target of intercurrent diseases.

In perfect health, the peripheral nervous system, if such it may be termed, should do its work unconsciously, so far as its possessor is concerned.

In disease, perversions of sensation or actual pain may be observed along portions of this system. Affections of the brain or cord, or the meninges; distal irritants, ulcers about the tongue or floor of the mouth, disease of the teeth, or alveoli, or gums, may give rise to pain, which, if radiated along a branch of the fifth, may cause trigeminal neuralgia. Probably, profound anæmia or malarial saturation, or both conditions together are common accompaniments of it. While, on the other hand, the tendency of the pain to wreck the patient's health is a most rational result. Suicide has in some instances been attributed to it. It is a significant fact that while many of these sufferers have had their teeth extracted before visiting the surgeon, relief is rarely thus obtained. External applications of drugs and electricity have been employed with some benefit. Morphia hypodermically has been a natural therapeutic reliance. It is in no sense curative. It aggravates the pain, for it creates the necessity for its repetition. The regular use of an opiate for a fortnight for pain or will often show its grip on the patient by the apparent production of intense pain, at the time at which the drug should have been repeated, according to the interval at which it has been given. In other words, the discontinuance of an opiate may often produce pain, if the expression be allowable.

"Considerable success has recently attended the practice of injecting a one per cent. solution of osmic acid into the tissues, close to the affected nerve. The injection itself causes a good deal of local pain, puffing and swelling, and has to be repeated several times before any permanent subsidence of pain is produced. This is probably due to the fact that the osmic acid, which has a powerful affinity for certain elements of nerves, as is known by the staining which it causes, sets up degeneration of the nerve

fibers with atrophy. The length of time which it takes to act in the treatment of neuralgia, supports this view and shows that the cessation of pain is not a "cure" in the true sense of the word." — *Treves*.

A small proportion of patients suffering from recurrent tic, get relief from the use of gelsemium or arsenic, or a change of climate. An old man whom the writer saw in consultation some months ago with the late Dr. Flowers of this city, had suffered much from neuralgia of the second branch. He had athermatous vessels, had become quite ex-sanguine and was much debilitated. By liberal feeding and the use of arsenic, with change of climate, relief was obtained. No doubt too the impairment of tone of the vascular tunics may have had its influence in inviting the disease and in retarding his convalescence. Of the radical procedures that surgeons have from time to time advocated for the correction of tic, either general or affecting other branches, I shall only say that while they are very interesting time prevents us from entering upon the discussion of them. Recurrence after the various operations is very common. The interval varies from a few weeks to three years. The most formidable thing done has been the removal of the Gasserian ganglion, which lies near the apex of the petrous portion of the temporal bone. The names of Mr. Rose of King's College Hospital, Andrews, of Chicago, Hartley, of New York, Keene of Philadelphia and Horsley, the brilliant surgeon, pathologist and neurologist of the University College Hospital of London, deserve conspicuous mention in connection with these radical performances. Carnochan of New York who devised the procedure, trephined the antrum to facilitate neurectomy, and his operation was resorted to in the cases which are herein submitted.

Case 1.—Mr. B. S., a German from Vinton City, aged 64, laborer by occupation, entered the Mt. Carmel Hospital, Oct. 1, 1893. He had had agonizing pain much of the time of late. It was paroxysmal and was not associated with convulsive movements of the facial muscles. A slight draught, the act of smiling or the gentlest efforts to masticate, gave rise to pain. It had increased so much during the previous few months as to impair his nutrition and strength. Furthermore he was incapacitated from all forms of labor. The pain affected the right side of face from the upper lip to the eye, and outward to the angle of

the jaw. The cheek and in fact all parts of the face supplied by the second branch were tender, and handling of the parts provoked an attack. All medication had failed to relieve him. Operation Oct. 19th, 1893. An anatomical landmark of interest to us is the fact that a straight line from the junction of the inner third with middle third of orbital edge of the frontal bone to the interval between the two bicuspids of both jaws, will if produced, locate the openings of exit of the three branches of the 5th; supra-orbital, infra-orbital, mental. A T-shaped incision below the orbital edge of the upper jaw was made and the nerve isolated, and a trephine was applied to the antrum. The nerve having been hooked up was followed through its canal by chiseling away portions of the bone wall. More than an inch of the nerve was excised. The wound healed in a few days. He was discharged from the hospital on Oct. 31st, 1893, eleven days later. He has had no signs of recurrence of the pain and is in excellent health.

Case 2.—The patient who is presented to you to-day is 67 years of age. For four years she had been afflicted with this disease. The usual therapeutic measures had been used and had failed to relieve her. She was anæmic and feeble. Her health had been broken. She was operated upon at the hospital last July. A small trephine was applied to the antrum as in the preceding case. The bony walls of the upper jaw were very thin and frail. The soft parts were lifted up from the floor of the orbit. By means of the chisel all the intervening bone was removed from the opening thus made through the lower rim of the orbit. This vertical extension was narrower than the trephine aperture. Following the nerve, the bone was perforated with a director throughout the course of the groove intended for the reception of that trunk. About an inch and a half of the nerve was excised. The extensive removal of bone destroyed in part the abiding place of the nerve. It offered a more radical destruction of it, in its continuity.

Comparison of the two cases has proved that the scar is less noticeable in this than in the first one. Although it is too early to demonstrate its permanent utility, it is gratifying to learn that there has been entire immunity from the former torture.

She has gained twenty pounds in weight since the operation.

Practical Points.*

BY DR. T. B. WALLACE, GARNER, IA.

FIRST—I would say to *all* that we must be practical as well as theoretical. Theory is all right in its place, but practical knowledge is better. Again a man must be practical if he makes a success of theory for they go hand in hand. A practical man will succeed but a man of theory alone will not, so to speak. You cannot separate them and lean safely upon either. For instance you have a case of alveolar abscess, or any case that does not succumb to your every day treatment of such cases, you begin to theorize upon the matter and seek for the cause and for some remedy that will remove it and effect a cure. Here you have practice and the benefit of theory combined. I am afraid that at times we are not practical enough; we may know how to do or act but if we are careless in some part of the operation the result is a failure. If every practical man attends to all the details connected with the operation his result is success. A practical man will not be lead away by every new remedy, instrument, method or appliance, he will prove it before he adopts it in his practice, for many old things are better than the new. We have too many, I am sorry to say, in our profession who will sell a useless article, be it instrument, appliance, or nostrum, to the unwary for profit rather than for usefulness, therefore, I would say to such be careful to know the merits of the article before you adopt it in your practice. A man had better have few remedies or instruments and have a thorough knowledge of their uses and values and obtain good results, than to have his cabinet or laboratory filled with useless articles for a show. It is the knowledge or practical skill that gives us the best rewards.

“Take care of the pennies, and the dollars will take care of themselves,” is an old saying and worthy of notice. If we attend to the minute details of preparing our work, we need not fear the results.

Take the superior bicuspid tooth which is quite badly decayed. We all know that but little dentine is left, less I think in proportion to the tooth and cavity than in any other tooth. We

* Abstract of paper read at Northern Iowa Dental Society.

prepare the cavity, make careful preparations for retention of the filling, fill it carefully; patient goes away and in the course of time he returns with the inner wall broken off. What is the trouble? We have not done the work right; the inner cusp, which was sharp, occluded too strongly with the lower tooth; causing it to give way. The filling is loosened and comes out. The crown is in bad shape and the only recourse left is to crown or cap in order to save it. In my experience that tooth has given me more trouble than all the rest of the teeth. My treatment now is to cut down the inner cusp until it is free from occlusion or to a point of protection from force. I apply this method of treatment to others especially to the molars. We are too afraid of cutting away too much tooth substance, but better that than to loose a filling from the wall breaking away. It is hard to tell just where to stop or what cases should be treated in said manner, as we will have to leave that point to your own judgment. Another mistake is trusting too much to pits and grooves for gold fillings. Pits and grooves alone will not hold a filling in a cavity. It must have a retentive shape in some manner. If necessary to make one, it should be made upon the strongest wall. Not only myself but some others, whose work has come under my care, have had failures by depending too much upon pits and grooves, to hold the filling in place. I now merely use a pit or groove to start a filling, and rely upon the retentive shape of the cavity to hold it. Some operators are more expert than others with gold and may not require so much care in preparing cavities but we cannot be too careful in preparing any cavities for filling. It is success and not failure we are laboring for.

Root-filling is another point. Some do not succeed very well along this line. Since I adopted the following treatment I have not had one failure so far and I have used it for a year or more. It is the use of hot air applied to the canal after a thorough treatment with peroxid of hydrogen and Black's 1, 2, 3 mixture. Then I dry canal with broaches wrapped in cotton, then force carbolic acid solution to apex of root. Taking my chip blower and lamp, I exhaust air in bulb, hold point in blaze of lamp, filling bulb with hot air, then apply to and force into canal until tooth becomes heated, then proceed to fill canal. I use chloroform with gutta-percha points. I have, I think, as

perfect a disinfected condition of tissue and canal as is possible to get. I have tried several ways, but this manner suits me the best so far. Now I believe in being practical in the laboratory as well as at the chair. I make my own broaches out of piano wire. I have several instruments and appliances that I have made out of old and broken instruments. Some I could not buy or did not know when I made them that I could get any thing like them. True, it is not required of us to make our own instruments but it used to be so a man could not buy all he needed. It is necessary of course, in making edged tools to know how to temper them; this may be acquired by practice, forming them first, tempering and finishing or polishing comes last. Bro. Steel suggested that I show some of them. They are here for any to look at that wish to do so. I do not take credit for the originality of all of them but some are my own designing.

ALL SORTS.

Gold in Artificial Teeth.

From an article in the *Dental Digest*, by Dr. Dr. G. T. Carpenter, we extract the following :—

“Take a plain tooth of medium size and press (any surface that we may wish to put the filling on) into moulding compound, or a clay prepared with glycerine. I then remove tooth and cast with a low-fusing metal into a rubber ring placed over mould, then reverse the die and cast more metal in rubber ring over first casting to form counter die. The metal last cast must be just hot enough to pour and not hot enough to unite with the first casting,

Now take pure gold, 30 to 32 guage, and stamp between dies to the desired shape. Place this stamped gold on the tooth that you wish filled and burnish to place, letting the free edge of gold extend back into the wax, so that when the case is packed and vulcanized the rubber will hold the filling firmly in place. The filling can be trimmed to the size required, but care should be taken to keep the edge of the gold that represents the margin of the filling as straight as possible. This will prevent the edge from turning up after proper beveling down to the surface of the artificial tooth.”

The Grinding and Backing of Porcelain Facings.

In a contribution to the *Western Dental Journal*, Dr. C. C. Allen gives the following method.

"The cause of the breaking of porcelain facings is found more often in the imperfect grinding and backing than in the heating and soldering of the piece. There seems little doubt that the two causes mentioned are responsible for nine out of ten of the broken facings which are revealed upon the removal of investment. This being the case, let us study well the proposition of grinding and backing teeth.

To properly grind a facing requires more time and care than any other one operation connected with the making of a crown, and it is very often given the least of both. Grind your porcelain from the very first toward the pins, as nearly as possible without grinding them, and never away from them, so that you may avoid any small nicks being made in the finished edge of the tooth. In your final grinding, be careful to leave the angle between the face of your tooth and the back *full and sharp*, not necessarily acute, though it sometimes is. Avoid a round edge, as you would in sharpening a pair of skates. After you have used the finer stone, finish up with a cuttle-fish disc, being careful, as suggested before, not to round your edge, but simply to smooth it. You should remove the superfluous material from the outer edge of your facing *clear up to the pins*, following a gentle curve, so that the back of the finished piece, if the pins were removed, would as nearly as possible represent a section of a globe. Avoid all humps and angles upon the back of your tooth.

Teeth should invariably be ground entirely over the back, so as to present an entirely new line of demarcation between the front and the back, and particular and special attention should be given to the cutting edge. You should never depend upon the strength of your facing for the strength of your crown, and this edge should be ground away until it is thin and sharp, almost like a knife edge.

After you have finished your grinding, if, upon running your finger nail around the edge, you find the tooth smooth, sharp and free from nicks, you have done your work properly, but if not you find it otherwise.

And now for the backing. Take a piece of pure gold, not platinum, of about 34 gauge, large enough to cover the whole back of the tooth, and punch for the pins in such a manner as to let the gold slip on and off easily. Anneal this gold, place it upon the tooth, take a burnisher, and begin gently to rub the gold to fit the tooth, beginning at the pins and working outward. Remove the gold and anneal frequently. As you approach the outer edge of your work, be very careful to rub the gold

gently, so as not to nick the sharp regular edge you have been so careful to secure. A little patience will enable you to work the backing down until it *fits* the back of the tooth. Then clip off the superfluous gold as close as may be, with scissors, and take a fine file and slowly file the gold down until you reach the edge of the facing. This part of the procedure is of great importance. Always file towards the edge of your work and let the file be held so that its surface will be on the same plane as the outside surface of your facing. This will give your gold an edge nearly square, as has your facing. Never file your gold so that you will have the least semblance of a knife edge any place. If properly reduced, the edge will always be at, or nearly at, right angles with the surface of the gold. After you have found your porcelain edge all around, if you have worked properly, you will find that the backing is tight against the tooth, and that there are no fins of gold overlapping the facing, and that your line between your gold and porcelain is as clear and smooth as the line between a properly inserted gold filling and the tooth. When you have arrived satisfactorily at this stage of the work, give your backing temporary fastening to your facing by cutting a barb upon the side of the pins and bending it down against the gold, and proceed to place your work for the fire.

One who has followed this method to the limits of its possibilities will find that he will break few teeth in the fire, no matter how rapidly he may heat up his work, or how hot he may get it, and that the backing approximate the porcelain so closely that boiling in an analin solution will not discolor."

Formalin in Dentistry.

LEPKOWSKI announces in the *Przegląd Lek.*, that he has found formalin very effective in cases of acute pulpitis, when even after the tooth has been filled the pain ceases in a few hours. Also after extraction of the sound pulp, in cases of incipient periostitis, and when the pulp is changed into an ichorous mass. He first cleans the tooth as perfectly as possible and then introduces a cotton wad dipped in formalin, which he covers with a stanoil plate, on top of which he puts the complete filling. A moderate pain follows for several hours, if the nerve had not been entirely killed. Formaldehyd kills the sound pulps completely, with no greater pain than accompanies the use of arsenic paste, with this advantage that the tooth can be filled at once, without further cleansing. He hopes that this treatment will be found all that he expects from it at present.—*Centralblatt f. Chir.*

Method of Making Combination Bridge-Work.

Dr. F. J. Fesler, in *Dental Digest*, describes the following method:

"The method is mostly applicable for spaces where superior or inferior cuspids or molars have been extracted. Particularly is this true if the wisdom or twelfth year molar be in place, the molar and bicuspid anterior to it having been removed. Or in cases where the second bicuspid remains standing alone, and the wisdom tooth on the same side is still in place, the other molars and bicuspid having been removed, as well as many other cases which will readily suggest themselves to the mind of the ingenious operator.

For example, we will select a case where the twelfth and sixth year molars and second bicuspid have been removed from the lower jaw. First take an impression in modelling compound, wax or other material, and make a model in plaster, then take the measure of the molar and bicuspid around which you are to form a clasp, first making a pattern from common tea-lead by which to cut the clasp metal.

This should be made from the following formula:—Take a ten dollar gold piece and two ten cent silver pieces, melt them together and roll into plate, No. 14 thick, U. S. standard gauge.

From clasp metal obtained in this way cut your clasp by the tea-lead pattern, made either from the plaster model or by direct approximation in the mouth, to go two-thirds of the entire distance around the teeth to be fitted. Fit this clasp as accurately as possible, then remove it and solder a lug or perforated piece of plate, to extend over into the rubber to which the teeth will be attached.

To prevent its being in the way of the teeth you should be careful to see where it is best to solder the lug, or two holes may be drilled through the clasp and a piece of gold wire, about No. 20, made in the form of a staple, can be soldered into the clasp, making a strong attachment around which to pack the rubber.

After this is done, the clasps being made and fitted to the molar and bicuspid, take them off, warm them and place some common wax or paraffine on the inside, and while warm replace them on the teeth. This helps to hold them in place and keeps the impression material from going between them and the teeth.

Now take an impression of plaster of Paris of that side of the mouth, and when the impression is withdrawn the clasps will come out with it, or if not can readily be readjusted into it. Then make a model from this impression, and when done form a plate of wax the size and shape of the one you wish in rubber. (It is well to carve out space for teeth to be afterwards attached.) Flask in the same way as in making rubber plate,

scald out wax, pack rubber in its place and vulcanize. When done, finish it up and try in the mouth to see if the work is perfect in adaptation, and if so, select your teeth, (I find the hollow back teeth to be more easily adjusted), fit them into place and try the bite. When correct proceed in the same manner as though you were repairing a common rubber plate when attaching a tooth or two. When completed it makes a very neat, cheap bridge, if too much lateral pressure is not brought to bear on it, in which case it will spring the clasps to the side opposite the pressure and allow the plate to gall the soft tissues."

Great Victory—The Low Bridge Suit Won by the Dental Protective Association.

Never since the day when the Goodyear Dental Vulcanite patent expired have dentists have had such cause for congratulation and rejoicing. We have had the privilege of reporting from time to time through letters, circulars, and journal articles, a succession of victories for the Dental Protective Association in all suits undertaken in the United States Supreme Court, and all the lower courts in various parts of the country, and every suit has been won. But no suit undertaken has ranked in importance with the one just decided. Consequently, active preparations for the defense of the suit has been in progress for eight years; a vast amount of correspondence has been conducted: weeks of time each year has been consumed in the taking of testimony: and not a day has been free from care and anxiety concerning it on the part of those in charge. Nothing has been left undone which could possibly be of advantage in the trial. Hence the relief and satisfaction that a decision has been reached and that right has triumphed.

All honor to the able attorneys who have worked so indefatigably in our behalf, and to the members of the Protective Association who have given their sympathy, co-operation and aid, even when it seemed as if victory must perch on the banners of our opponents.

The one obstacle which has given us the greatest amount of trouble during all the protection of the members was, that the Crown Co. had obtained a decision which declared the Low Bridge patent valid, before the organization of the Protective Association. This enabled them to force licensees to agree to recognize the validity of all their patents—some forty or fifty in number—on which no decision has ever been rendered, and helped them in other ways to intimidate and secure royalty from any members of the profession. In fact, their having obtained the decision favorable to the Low Bridge patent has been their main bulwark

of strength. And this company positively refused to have another trial to test the validity of their patent in any federal circuit except the one in which their patent had been declared valid. Hence we were handicapped from the outset, and hence the greater the victory. We met them on their own ground and won, the suit being dismissed by U. S. Judge Hoyt H. Wheeler, of Vermont, before whom the case was argued at New York City, January 14th to 17th last. Members of the Dental Protective Association—and those who should be members—it is time for handshaking and congratulations.—*Editorial Dental Digest.*

Medicinal Treatment vs. Expert Manipulation in Dental Practice.

From an article by J. D. Patterson, published in the *Western Dental Journal*, we extract the following :

“ I believe that medicines are often relied on for a cure because of inexpertness in manipulation. Give me the dextrous operator who is not afraid of hard work, whether it be in cleansing a pulp-canal or doing the surgery in a case of pyorrhea, and I will trust him for a cure where the man of medicines will fail. A great need in dentistry to-day is a class of men who have been mechanics or mechanic artisans before entering upon the practice of dentistry ; who have that dexterity in the handling of tools that can only come through long use. Our ranks and our colleges are full of students who cannot sharpen a lead pencil, square two edges of a board, or make a dowel to fit a mortise. So we see them, instead of going into such training, lean upon therapeutics. The bacteria in a pulp-canal will be deluged with a dozen different germicides, instead of being removed with the delicate touch and without leaving broken broaches. The calcic deposit in a pyorrhea pocket will be approached with syringes charged with all kinds of dissolvers and bug-killers, instead of doing a good deal of solid manual labor in removing irritant matter with the hand, guided by scientific knowledge of the tissue worked upon.

The proposition may be laid down in regard to medicines in dental practice as follows: The employment of antiseptics, disinfectants and stimulants should follow after expert manipulation has mechanically removed every possible polluting presence, and then in only such quantities as are necessary, and give no injury to tissue, or prevent repair tissue forming. In the treatment of pyorrhea, after the surgical operation which has removed all trace of irritation, and the antiseptic has destroyed what cannot thus be reached, then a gentle stimulant used, Nature at once endeavors to repair the waste. The germicidal nuclein which has

been proved to exist in the blood, may safely be left to take care of all else except extraneous irritation. In these circumstances, how unwise it must be to institute daily or every other day, continued syringing and interference, which will break up and destroy formative tissue, which is being built up from the plasma. The use of medicine in these cases should end when the territory is freed from poisonous matter, and only strict hygienic measures are kept up."

Odontodol.

In an abstract from the *Presse medicale de Paris*, De Bary says that odontodol is the name given in Italy to a new preparation which is superior to all others known in the treatment of toothache. The formula is as follows:

| | | |
|--------------------------------------|--------------|------------|
| Cocain hydrochlorate, | } each . . . | 15 grains; |
| Essence of cherry-laurel, | | |
| Tincture of arnica | | 150 " |
| Solution of ammonium acetate | | 300 " |

If the pain is caused by caries, a piece of cotton saturated with the liquid is put into the cavity of the tooth; if it is caused by inflammation of the pulp, the mouth should be washed out with a solution consisting of 450 grains of odontodol diluted with 750 grains of a tepid decoction of linseed. Finally, if the pain extends to the entire jaw, the painful surface should be thoroughly rubbed with several drops of odontodol, after rinsing the mouth with the solution.

Making Crowns.

From an article on this subject published in the *Items*, Dr. C. F. Rodgers says:

"Place pieces of paper around your die plate, having them wide enough to extend an inch above the plate, this fill very carefully with plaster. When hard you have an impression of your die-plate. Then drill a one-eighth inch hole through the plaster in the center of each tooth, beveling the upper edge. Now, with a sharp chisel cut off each tooth. To make the surface smooth, go over it lightly with a piece of fine sand paper.

Tie the plaster on the die-plate and directly under each hole is the cusp of a tooth. Now warm both plaster and plate so that it can barely be held in the hand, and heating Mellott's metal to the melting point,

pour in each hole quickly till all are filled. When hard break up the plaster and you will have perfect cusps, with a cone-shaped piece of metal attached. Remove them from the plaster, one by one, and cut off the cone of metal and place each cusp in its respective place on the die-plate. When all are in place warm a piece of base-plate wax and place over all; invert the whole and press rather hard against your bench and lift up die-plate, this will leave the cusps all adhering to the wax. Take one at a time and place on the die-plate, with a few strokes of a file the little quarter-inch piece of metal is removed and the cusp is flush with the die-plate. You now have just such cusps as are furnished with the Hollingsworth system. Keep them all on a piece of wax.

When you have a crown to make, make your band to fit the root, and finish the end that is to go under the gum nearly as you wish it when finished. Heat the band and immediately force the prepared end in a piece of soft wood and contour the crown while still in the wood. This will preserve the shape of the neck. After contouring, try in the mouth and select one of your little cusps. Articulate properly by filling band with wax and sticking on cusps. Have the band a little longer than you think necessary and file off till the cusp articulates properly. When you have the proper cusp selected, you do not have to make a special die for that crown, simply observe the position of your cusp and swedge cap on the same on die-plate.

When extracting teeth save those having good cusps; if they are too sharp grind to shape with carborundum wheel, and saw cusp off with bracket saw. When you have thirty or forty of these cusps, cut a piece of tin to fit in a pasteboard box and shellac it on one side. Before the varnish dries place your cusps on it in regular order. Now fill all the little ridges between the cusps in which the plaster might catch and break with wax; oil the whole slightly, and carefully pour plaster until there is at least an inch above the tin. When hard, remove the plaster from the box, pick out cusps, this gives you a model of a die-plate. Send this to any place where they make fine gray iron castings, and for about a dollar you can have a die plate equal to a six-dollar one."

Manipulation of Amalgam.

In a paper on *Dental Amalgams*, published in the *Dental Review*, Dr. A. C. Hewitt gives his method of manipulation as follows:

Dryness is as imperative a prerequisite for enduring amalgam work as for gold.

Of course there are caries in such positions that no amount of skill

can bar the oral fluids. These are best treated as emergency cases, with amalgam that contains a large per cent of copper (from 10 to 20 per ct.), excepting and promising only limited results, and this without any expectation that tooth and filling will remain uncolored; or if preferable gutta-percha may be used.

When the cavity is prepared, its surface, including cervix and margin, if cavity is compound, should be coated with some balsamic or sticky resin cut in alcohol, coating every particle of surface to be covered in by the amalgam.

Allow a few seconds to pass so that the varnish shall have time to dry, and then with some moist amalgam cover in cervix (if any) margins, enamel rods and all, by burnishing with a smooth "shot" or flat-faced point till tubule and enamel are thoroughly coated as is glass for a mirror, thoroughly grinding in and intimately mixing amalgam with the thin film of varnish. While doing this "poke" out of the cavity all superfluous amalgams, or that which does not adhere to seat, wall or margin. The varnish is more for the purpose of catching hold of the mercurialized metals and holding them in place while the burnishing point is grinding them into tubule, enamel interstice, in angle and along the margins than as a bar to moisture, or for any other purpose. I deem this part very important.

Now and not before adjust matrix if a compound cavity. Wring out from the supersaturated mass of amalgam a portion and break into small pieces and proceed to build up the filling, using burnishing points with a circular motion, and keep the wall portion of the filling the highest. When the first layer is packed in place and burnished down, on no account disturb it, but superimpose another layer, thin enough so that the burnishing shall make the second layer cohere well to the first. In this way build against wall, and in angle until the cavity is "rounded full." The whole mass by this time is solid, and only on the cone surface will there be surplus mercury. This surplus, if any, must be absorbed with tin foil, or better, cubes of crystal gold, well annealed. Then the plug must be burnished down *from center* to and over margins.

The passage of the middle mass of amalgam over the borders will carry any superfluity of mercury and leaves the lines along the margins as dense and dry as is the mass in the center, and no "black ditch" will open to plague you.

Care must be exercised in removing the matrix not to break any part of the mass, and the patient must be cautioned against forceful occlusion of the teeth till it is ascertained that the filling is not too high.

Do not mix the amalgams in a mortar or in a bare palm of the hand cover the palm with a piece of leather, and use a spatula instead of the

fingers. Why should a neat operator soil hands and fingers, and saturate the amalgam with oil and sweat from the palm, when it is so easy to do better."

New Treatment of Pyorrhea Alveolaris.

In an article in the *Dental Register*, Dr. C. H. Rosenthal says :

"Several months ago I had occasion to see a mouth in which I had placed a piece of bridge-work three months prior. The bridge consisted of two gold caps on the lower cuspid teeth, sustaining the central and lateral incisors which, as a result of pyorrhea alveolaris, has been lost. The cuspids to which the crowns were attached, as well as the approximal bicuspid, were also badly affected ; so much so, in fact, that at the time I was apprehensive of the result. To my astonishment, three months after the operation, I found that the cuspid teeth had regained much of their firmness and an entire cessation of secretions. The bicuspid was still in the same condition as when the work was done. This caused me to suspect that the presence of the metal, which was driven well under the free margins of the gum and made of 20-karat gold, alloyed with silver only, might account for the cure. I at once placed gold bands around the necks of the bicuspid teeth, cementing them firmly in place to prevent riding. In an incredibly short time about these teeth, too, the flow of pus stopped. I have tried this method in three cases since with uniformly good results. In the most recent case, instead of using the gold bands, I used pure silver. The idea was suggested recently at the Johns Hopkins University, where experiments were made on silver disks by pouring pus cultures on glass slabs ; where the cultures came in contact with the silver they at once became innocuous. The silver band experiment proved by far the most valuable. In the short time of five days there was an entire abatement of the secretions. This led me to believe that it was the silver contained in the gold crown of my first experiments that did the work. The experiments at the Johns Hopkins University show silver to be the best agent of all the metals to destroy pus cultures.

The method of adjusting the bands is much the same as making a gold crown—fitting snugly to the tooth and cementing firmly. None of the metal need be exposed to view, since the only object is to have it in contact with the diseased tissue. I have not removed the bands in any of the cases, and therefore cannot state if there will be a recurrence of the trouble. I am of opinion, however, that if all the teeth affected were treated in this manner, and the disease entirely eradicated from the mouth, there would be no recurrence. Should this not prove true the

bands left on the teeth permanently would certainly be an improvement on pyorrhea alveolaris."

EDITOR'S NOTES.

A Suggestion.

THE subject of instructing the public in dental matters has been discussed in our societies for years and yet but little has been done toward enlightening the people.

We might continue to discuss this question until doomsday without greater benefit, unless some active steps are taken. Many methods of imparting this information have been suggested, viz.: well written articles in pamphlet form, for patients; lectures to school teachers and pupils; addition of subject matter to physiologies; publishing articles in the newspaper; etc., etc.

No one method, as outlined, will reach the number of people desired. It seems that the most feasible means is through the press and we will now suggest a new method of utilizing the newspaper to the greatest advantage:

Let the American Dental Association appoint a committee, one of which shall be made editor. The duties of this committee shall be, first, to correspond and arrange with leading dailies in the United States, one only in each city, to publish one prepared article in the Sunday edition each week, until a whole series is printed. The articles to go to the publishers thoroughly edited and ready for publication, and to be gratuitously given, providing an announcement be made each week in the daily advertising their Sunday issue, calling attention to the forthcoming article.

We have assurance that this can be effected.

The Sunday paper is suggested because it has a large circulation and is more generally and thoroughly read than the dailies, although the Saturday or Monday issue could be used if desired. If this be accomplished, the next duty of the committee shall be to appoint prominent men in the profession to write a series of articles, in popular style, bearing on every phase of the subject in hand. Each person to write only one article and that to contain not more than 1000 to 1500 words.

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When written, these articles should be sent to the committee to be edited and prepared for the press.

When set in type, proof will be sent the author for revision. When corrected, enough copies will be printed from the galley to supply the papers secured. Proofs of each article to be sent publishers about one week in advance and the article to appear simultaneously in the desired edition of all the papers, and this continued each week until the whole series is published.

There are about fifty available papers and they reach fully 12,000,000 readers.

Then, if desired to further extend this knowledge, dentists in towns can get their home paper to republish the articles, without credit, and call special attention to them.

When set in type, the matter can be paged and stereotyped for pamphlet use, if thought advisable. The pamphlets furnished to dentists at cost, would be very cheap and enable them to supply their patients, and also teachers of the public schools, that they may read them to pupils, in the school room, and thus assist in imparting this knowledge.

The whole expense would not be great. If each state and local society would contribute a few dollars, aside from that given by the American Dental Association, there would be ample means to carry out the project in a thorough manner. And who can estimate the benefit to millions of people and thousands of dentists.

This suggestion was offered at the Mississippi Valley Dental Society, Cincinnati, April, 1896.

Improper Credit.

IN reply to our editorial "Dishonorable Methods," editor Welch, of *Items of Interest*, in the April issue admits that he directed Mrs. Walker not to give credit to journals from which "Practical Points" were taken, but to merely mention the name of the author.

Printed in this way these items appear to the unsuspecting reader as *original contributions*.

Is this not deception? Is it not injustice to those journals

that have secured the original matter and often at a considerable expense?

Dr. Welch in his editorial also says:

"We have stated over and over again that where only a short item is quoted we do not regard further specification necessary." Why is it not just as necessary to give proper credit for a portion of an original contribution as it is for the whole? We have been taught that it is just as much of a sin to steal a penny as it is to steal a dollar.

In another portion of Dr. Welch's editorial we read:

"Dr. Bethel says we are similarly at fault in other parts of our journal. If the doctor refers to other than these minor clip-pings we should like to have him specify. Not that we are perfect; we may, sometimes, make a mistake, but we try to do justice to all." Also, "If you have a real complaint, halloo to us and we will try to treat you fairly."

A real complaint! Haven't our complaints been real enough? Well, how is this one?

In the October *Pacific Dental Journal* there appeared an original article by Dr. L. P. Haskell. In the January, 1896, issue of the *Items of Interest*, page 34, a portion of this article is printed and credit given the *Pacific Journal*. On page 36, same issue, another portion of the same article appears, and is also credited to the *Pacific Journal*. While on page 20, same issue, still another portion is printed and no credit is given the *Pacific Journal*. In the *Items of Interest* for February, page 99, a duplicate of a portion of the article on page 36, January *Items*, is reprinted and here no credit is given the *Pacific Journal*. In the February *Items*, also, on pages 73, 103, 108, 109, 109, 111 are other portions of this same contribution and no credit given the *Pacific Journal*. Here are seven portions of one article distributed throughout the February *Items* and no credit given the *Pacific Journal*, from which they were taken.

In the April *Items*, page 241, is printed a portion of this same article, a duplicate of that appearing in the February issue, page 109. Also on page 242, April *Items*, a portion of the same article, a duplicate of that appearing on page 73, February *Items*, and in either instance with no credit to the *Pacific Journal*. Is this some of Dr. Welch's "justice to all?"

Another instance. An article by Dr. C. E. Bentley, which

appeared in the *Dental Review* for November, 1895, was cut into three sections and published in the February *Items*, credit being given only in one instance.

We might fill pages with reference to articles republished in the *Items* without due credit, but these are enough to serve our present purpose.

Dr. Welch argues that these methods are right because *he* "does not regard further specification necessary."

But, are they right? Let us settle the question now for all time, by the majority of replies, pro or con, from editors of dental journals published in America. We therefore ask their opinions regarding this subject.

We desire to do whatever is right; and if Dr. Welch is right then we, also, shall stop doing a "credit business." If he is wrong, let him acknowledge it and do what is right.

A Malicious Statement.

IN replying to our editorial "Dishonorable Methods," editor Welch of the *Items of Interest*, among other things says:

"Most dental journals follow our course, though some—like the *Ohio Dental Journal*—often quote the journal and ignore the author. As for instance, turn back one leaf from where this complaint appears, and we find two such quotations. Turn back another leaf, and we find two more."

In these three (instead of four) cases cited, the articles copied *did not state* who the author was, so how could the name be given?

That we often ignore the author when the author's name is given, is false. Dr. Welch cannot point to a single instance of this kind in any issue of the OHIO DENTAL JOURNAL during the past year.

New Publications.

CATCHING'S COMPENDIUM OF PRACTICAL DENTISTRY FOR 1895, pp. 318.

B. H. Catching, Atlanta, Ga., Ed. and Pub. Price \$3.00.

This compendium is a regular visitor at our office each year, and it comes to stay. We would not think of parting with it unless we could obtain another copy. It is a valuable book for every dentist and justly deserves universal circulation. This edition has been somewhat enlarged and a new department—Science in Dentistry—has been added. This is a good move and we hope the department will be kept up.

The work is entirely practical and replete with helpful suggestions. If you are not already a subscriber you should become one.

PATHOLOGY OF THE MOUTH AND TEETH, By Dr. Leon Frey, Professor of Pathology à l'Ecole dentaire de Paris, Pg. 179. Published by J. B. Bailliere & Fils, 19 rue Hautefeuille, Paris, Fr., 1896. Price 3 fr.

This little book is one of a series of manuals published under the direction of Ch. Godon, Director of the Dental School of Paris. It treats the diseases of the teeth, mouth and jaws in an interesting and practical manner. The book is concisely written and contains much material in an admirably condensed form.. The text is illustrated by appropriate engravings. It is a valuable little work for students and practitioners.

DONT'S FOR CONSUMPTIVES, OR THE SCIENTIFIC MANAGEMENT OF PULMONARY TUBERCULOSIS, ETC. By Chas. W. Ingraham, M. D. Binghamton, N. Y.

This work of 218 pages is a general treatise on the management of pulmonary invalids. The author has pointed out how invalids should proceed in order to obtain the full benefits of nature; how susceptible persons may create and maintain immunity against the disease; details pertaining to the absolute destruction of all infectious matter; how the patient may easily obtain a thorough understanding of the various effects of tuberculosis upon the system, and how he may co-operate with his physician in an intelligent manner in the general management of the disease. The book is written in a lucid and popular manner and contains much useful information for every one.

BOOKS RECEIVED.

PRINCIPLES OF BACTERIOLOGY, By A. C. Abbott, M.D. Philadelphia : Lea Brothers & Co., Pub., 1896.

DENTAL PATHOLOGY AND PRACTICE, By Frank Abbott, M.D. Philadelphia : The S. S. White Dental Mfg. Co., Pub., 1896.

THE handsome, useful and exhaustive price list for 1896 which Parke, Davis & Co. are now distributing to the physicians and pharmacists of the country, bears on its title page striking evidence of a much-merited prosperity, for we observe that they have established a branch in New Orleans. Moreover, since the list was printed, they have opened still another branch, at 8 South Howard street, Baltimore, Maryland.

Some idea may be gained of the magnitude which this enterprising house has achieved when we state that the list now before us embraces over six thousand different products, comprising some twenty-nine distinct and complete lines of pharmaceutical preparations.

Aside from the priced catalogue, the list contains much valuable information, general, botanical, pharmaceutical and therapeutic.

It is barely necessary to remind our readers that the name of this firm has become a synonym for all that is honorable, upright, progressive and scientific in manufacturing pharmacy. No one will begrudge them their wonderful success when he pauses to reflect that their laurels have been won during twenty-five years of crucial testing at the bedside and in the clinic.

SOCIETIES.

Topics for Discussion.

THE appended list of topics, for discussion by all the State and local dental organizations, has been formulated by the committee of the American Dental Association having that matter in charge.

Will you kindly present these subjects for the consideration

of your society, and use your best endeavor to have a report of the discussions thereon forwarded to the chairman of this committee, in time for the next meeting of the American Dental Association in August next?

LOUIS JACK,

J. N. CROUSE,

EDWARD C. KIRK, *Chairman.*

Lock Box 1615, Philadelphia, Pa.

TOPICS FOR DISCUSSION FOR STATE AND LOCAL ORGANIZATIONS.

1. Should not the appointment of Dental Examining Boards be under the control of the State Dental Societies?

2. Should not the granting of certificates of qualification by Examining Boards to non-graduates be generally abolished?

3. To what extent is the washing of amalgam masses an important feature in the production of a good filling?

4. What results are to be expected in replantation or transplantation as a means of treatment of chronic phagedenic pericementitis?

5. The committee earnestly recommend that the report of the Committee on Dental Nomenclature of the American Dental Association be fully studied and discussed.

Resolutions on the death of Dr. W. H. Dwinelle.

THE rapid years have gathered one more of the great men of our profession to his final rest.

Dr. W. H. Dwinelle, whose life we commemorate, and whose death we mourn, was one of the great figures in the early days of our young profession.

He was born in Cazenovia, N. Y., where he died at the homestead on Feb. 13th, 1896, 76 years of age.

Entering our profession at a time when it was struggling for recognition among the learned professions, he brought it to the influence of a remarkable personality, and through his varied attainments, and by his energy and hopeful confidence he helped, as few others did, to place it upon a secure foundation among the learned and liberal professions of the world.

Fitted for the practice of medicine and surgery, he yet saw in the specialty of dentistry a wider field for the exercise of his

peculiar genius, and he entered upon his work with boundless enthusiasm.

This is shown by his numerous inventions, his brilliant operations, and his contributions to the professional literature of his time.

It is also warmly attested by the few surviving companions of those early days,

He assisted in the formation of the first Dental College, and was instrumental in establishing the American Journal of Dental Science—one of the most dignified and influential journals our profession has produced.

He performed surgical operations in the Oral Cavity; that were the admiration of the general surgeons of the day, and he performed operations upon the teeth that had never been attempted before.

Many examples of his work are still in existence, to testify to his remarkable ingenuity, and to his unusual skill.

A man of warm heart and generous impulses, he freely gave to all who came; his office was always open, and he was ever ready to show his instruments, and his methods to any one who desired to learn.

Having practiced medicine and surgery before he entered the dental profession, he commanded the confidence of physicians and surgeons, and was thereby able to help, in an unusual degree, to secure recognition for our specialty, and he stood, for many years, as a bond, between the parent profession, and its young off-spring.

A man of literary tastes, and a devoted lover of art in all its forms, he was able to reflect credit upon our profession at a time when such influences were more needed than at present.

A man of tender sensibilities, he was a genial companion, and his wide sympathies and varied talents, made him a great favorite among cultured people.

He was a man of so many gifts that he could have been a poet, an actor, an artist, a sculptor, or a literateur; this wide range of talent, made him always an agreeable friend.

Before the bar he could have been a great advocate; in the medical profession he would have been a great physician or a great surgeon.

He chose to be a great dentist.

For this we honor his remedy. and we think it fitting that this, the N. Y. Odontological Society, once presided over by him, should place on record, its appreciation of him while living, and its sorrow for his death.

Committee. { A. R. STARR,
WM. JARVIE,
S. G. PERRY, *Chairman*.

Dental Section.—American Medical Association.

THE next meeting of this association will be at Atlanta, Ga., May 5-8, 1896. A good program is announced and a profitable meeting expected.

Lake Erie Dental Association.

THE 33rd annual meeting of this society will be held at Cambridge, Penn., May 5, 6 and 7, 1896. It promises to be one of the best ever held. Members of the profession are urgently requested to attend.

H. E. DUNN, *Secretary*.

Vermont State Dental Society.

THE 20th annual meeting of the Vermont State Dental Society was held at Queen's Hotel, Montreal, P. Q., March 19-20, 1896. The following were elected officers for the ensuing year: President, Dr. F. P. Mather, Chester; 1st Vice President, Dr. C. S. Campbell, St. Albans; 2d Vice President, Dr. J. A. Robinson, Morrisville; Rec. Secretary, Dr. Thomas Mound, Rutland; Corresponding Secretary, Grace L. Bosworth, Rutland; Treasurer, Dr. W. H. Munsell, Wells River. Executive Committee, Dr. L. C. Caves; Montpelier, Dr. H. Turrill, Rutland, Dr. C. W. Steele, Barre. State Prosecutor, Dr. G. W. Hoffman, White River Junction.

Next meeting to be held at Montpelier, the third Wednesday in March, 1897.

THOMAS MOUND, *Recording Secretary*, Rutland, Vt.

Chicago Dental Society.

OFFICERS for 1896 elected as follows: President, Louis Ottofy; first Vice President, J. E. Hinkins; second Vice-President, H. A. Costner; Recording Secretary, A. H. Peck; Corresponding Secretary, Geo. B. Perry; Treasurer, E. D. Swain; Librarian, H. A. Gunther; Member Board of Directors, G. H. Cushing; Board of Censors, G. T. Carpenter, B. D. Wikoff, G. W. Schwartz.

Mississippi Valley Dental Society.

OFFICERS for 1896 were elected as follows: President, J. E. Cravens; first Vice-President, Grant Molyneaux; second Vice-President, H. C. Matlack; Treasurer, Frank Hunter; Secretary, H. T. Smith.

OUR AFTERMATH.

ANOTHER DENTAL COLLEGE.—The Pittsburg Dental College, Department of Western University of Pennsylvania, has been organized with J. G. Templeton, A.M., D.D.S., as dean. The first regular course will begin October, 1896.

HAVE WE ANOTHER FRAUDULENT COLLEGE?—It is said there is a so-called dental college in Wisconsin that is selling diplomas. If it is a fraud, decisive steps should be taken to kill it.

CHANGE OF BASE.—Drs. Henry Barnes and H. F. Harvey, Cleveland, announce their removal to the New England Block.

Dr. L. L. Barber, Toledo, is now located in the Spitzer building.

Dr. W. D. MILLER, Berlin, Germany, is now located at Victoria-strasse 30.

DIED.—The friends of Dr. J. P. Gray, Nashville, Tenn., will be grieved to learn of the death of his estimable wife, which occurred March 4th, 1896.

NEW COLLEGE BUILDING.—The Dental Department of the Western Reserve University will be located in their new building this fall. It is a model of completeness. Its equipment and advantages offered are unsurpassed.

COLLEGE COMMENCEMENTS.—Annual announcements are being received. Later we will publish a complete list of colleges and number of graduates.

THE OHIO DENTAL JOURNAL.

VOL. XVI.

JUNE, 1896.

No. 6.

CONTRIBUTIONS.

Electricity and Cataphoresis.

BY H. L. AMBLER, D.D.S., M.D., CLEVELAND, O.

THE discovery of electric currents originated with Galvani in 1786, and the effect of the current is thermal, chemical, magnetic, physiological, and it flows from the positive to the negative pole, that is, the direction of an electric current is from the high potential to the low. An elongated cylinder with rounded ends, has the most electricity at the ends, and at the *edge* of a flat disk the electricity is the greatest. Franklin discovered the power of points in drawing and throwing off electricity, and also made the grand discovery of positive and negative state of electricity. At a *point* the electricity is dense, and on the edges, and corners of bodies, there is more electricity than on the flat parts; thus we have good scientific reasons for having our platinum electrode, for use in the teeth, either pointed, or notched. Platinum makes a good positive electrode for dental use, because it is not corroded by medicaments, and also on account of its resistance which is about six times as much as silver, and a rise of temperature in equal wires, with the same current, is twelve times as great for platinum as for silver. The average electrical resistance of a pure annealed platinum wire one foot in length, and 1-1000 of an inch

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in diameter, is 54.49 ohms. So we have in this metal an electrode which offers sufficient resistance to the passage of the current, to produce the desired electrical results in the tooth cavity. A slight current is set up in a platinum wire, when one end touches the tip, and the other the base of the flame. Vitrous selenium is a very poor conductor, and has a resistance 40,000,000,000 times as great as copper. Vibration produces electricity which is always present in the atmosphere, and is due in part to evaporation going on over the ocean, and all kinds of electricity from different sources, produce the same kind of chemical action, or effects. Voltaic and galvanic electricity differ only in degree, from frictional or any other electricity, both can flow through wires, magnetize iron, and decompose chemical compounds. Liquids are divided into three classes; first, those which do not conduct at all, this includes turpentine, petroleum and many oils; second, those which conduct without decomposition, such as mercury, and other molten metals, which conduct the same as solid metals; third, those which are decomposed when they conduct a current, under this head we have dilute acids, solutions of metallic salts, and certain fused solid compounds. Liquids conduct better when warm, because the internal resistance is reduced. A Daniell's cell heated to 212° gives one and one-half per cent. more electromotive force. Gases and vapors can receive a bodily charge of electricity, but solids and liquids are charged on the surface, from this it appears that when using a liquid for obtunding, that action is going on at the surface where the liquid and dentine join, and in cases where it requires fifteen or twenty minutes to obtund, we can shorten the time by renewing the medicament once or twice. Most of the electrical action is exhausted, where the highest resistance is offered to the passage of the electrical force.

The power of contracting under the influence of the current appears to be a distinguishing property of protoplasm wherever it occurs, thus if the dental tubuli are filled with protoplasm, may we not have more or less contraction when applying cataphoresis, thus assisting the process?

On the other hand, if the tubuli are filled with nerve fibrils, they will act as good conductors, as they stand second among the tissues of the body; blood being first.

We would add to what we said in a former article about obtundents, that *good* guaiacol is *colorless*, slightly escharotic when

applied to the mucous surface. Dr. Gillette says, when used *alone* it will not conduct, but by adding 1-200 part of water it is made a conductor.

The twenty-five per cent. cocain solution with two per cent. of boric acid, to add to its conducting properties and make it stable, and also the guaia-cocain solution should be kept in bottles with glass stoppers; otherwise there will be some loss, the salts will partly escape and be deposited around the cork. In making any solution for cataphoric work, it should be borne in mind that alcohol, ether, and chloroform, are *very* poor conductors, also, if the resistances of the fluid medicament is too great, no current passes, and if the resistance is too small, there is little if any cataphoresis.

It has been demonstrated that when light falls upon the retina a slight electric current is set up in the optic nerve, and when a current is transmitted through the eye-ball, it produces sensations as of a bright flash of light, and a stronger current shows blue and green.

If two illuminated plates are alternately presented to the eye in rapid succession, the well known flickering sensation is produced, very much like the flickering, at times, of an arc light.

In addition to these sensations which have been produced in experimenting upon patients when a water rheostat was used in obtunding dentine, we add distinct vibrations of the current in the tooth, and flashes of lightning accompanied with nausea. Let us try to explain the difference between the rheostat and selector. Imagine a reservoir perpetually filled with water, now a rheostat is like a dam to that reservoir which lets the water flow over the top, it cannot check the water above a certain level, that is, it holds back only that below a certain level. The pressure of the water in the reservoir represents voltage quite accurate, the flowing or surplus water represents amperes; in case of the dam the pressure is controlled only by proportionate rise of the water above the level of the dam, and varies as the water flows over the top of the dam, one decreases, while the other increases.

The selector is like a faucet in the center of the bottom of the reservoir; there is above always the initial pressure of the full reservoir, and as the faucet is opened by degrees the stream comes out swiftly and is sent far away by the pressure behind it.

When the faucet is opened to its full extent the size of the stream cannot be increased, but as the pressure increases by the filling up of the reservoir, the stream will come out with more and more swiftness and reach a further distance away. Voltage is represented by pressure; amperage by force and size of the stream. The selector controls, first the flow of water to its maximum of one-fourth of an ampere at the faucet; second, it controls the pressure at the source of perpetual supply. When the flow is swift enough and reaches a sufficient distance, the pressure is kept at that point by selecting the quantity of water necessary. A rheostat is useless and helpless at the point of overflow, both as to the pressure and the flow. A fluid rheostat has the disadvantage which arises from a varying amount of corrosion which attacks the metallic conducting surfaces, and will thus produce irregular obstructions to the transmission of the current. If the sparks from an electric machine are received on a piece of white blotting paper dampened with a solution of iodid potassium, brown patches are seen where the sparks have effected a chemical decomposition and liberated the iodine. This chemical fact is made use of for determining the poles of the selector and if a strip of above prepared paper is laid upon the binding posts, and ten volts turned on, that part resting on the positive pole will very soon turn brownish in color.

Blue litmus paper is colored red from the chemical union of nitrogen and oxygen of the air forming nitric acid. This fact can also be utilized in finding the poles; if a strip of blue litmus paper dampened, be pressed on top of the binding posts and ten or fifteen volts turned on, the positive will make a reddish, and negative a deeper blue spot.

If an horizontal tube turned up at the ends, be filled with water containing a trace of sulfuric acid, and a globule of mercury be placed in the middle of the tube, the passage of a current through the tube will cause the globule to move along towards the negative pole. The liberation of small quantities of gas by electrolysis, at the surface where the mercury and acid meet, alters the surface tension, and thus a movement results from capillary forces.

Dr. Morton has ingeniously applied this fact in the construction of his pole-finder, which can be used in connection with the selector to determine the poles, by connecting a terminal with

each end and applying the current, the mercury moves towards the negative pole; he says this is mechanical force of the current, and apparently has nothing to do with osmosis.

In dentine, we have a tissue of high resistance to the passage of the current, or osmosis, and our object should be to concentrate the electrical action. If two electrodes of different sizes are applied to the skin, the current passing through the interpolar region exerts the most powerful influence where it is the densest, or under the smaller electrode. The shorter the distance of the interpolar region, the greater will be the proportion of the current flowing through the tissues immediately beneath the electrodes; the longer the distance, the more this current will diffuse itself throughout that portion of the body between the electrodes. The amount of internal tissue included between the electrodes, does not necessarily interfere with the strength of the current (this being regulated by the resistance offered by the epidermis), yet it does govern the distribution of the current, or its density, in that portion of the body which is traversed. The physical fact then is, if the electrical force is transmitted through a conducting medium having a homogeneous substance, the diminution of the resulting force will be in proportion to the length through which it travels. This result is due to an increase of resistance caused by the increased length of the path of the current.

Taking these facts into consideration, we would reasonably expect somewhat quicker and better results from placing the negative (sponge) electrode as near as convenient to the tooth to be operated upon, instead of on the wrist or hand where the epidermis offers more resistance to the current, this would be especially so in the palm on account of the consistency of the tissue. Rubefaction of the face or neck, under the negative electrode, can be produced by prolonged application, but in using the selector we have never had a patient notice it. If a surgeon wishes to produce absorption of goitre, for instance, by cataphoresis, he applies the negative electrode near to the growth whose absorption it is his object to accomplish, for he knows that the movement of liquid goes from the positive electrode to the negative, and he does not care to have an extended interpolar region.

(To be continued.)

The Electrical Aspect of Cataphoresis.*

BY L. E. CUSTER, B.S., D.D.S., DAYTON, OHIO.

DURING the past year the literature and discussions upon cataphoresis have developed so many remarkable statements from an electrical point of view that it seems in place to give a few personal observations in this connection.

Since cataphoresis is a modification of the electrolytic property of electricity, the current must flow in one direction. It may be continuous, pulsating or interrupted, but as long as it flows in one direction when it is in action, the result will be the same, and a suitable agent will be carried with it in cataphoresis. It has long been observed, however, that the more uniform the pressure is maintained on a continuous current the less is it felt in its various applications in electric therapeutics and in proportion as the pressure varies, while it may still be continuous, will it be painful to the patient. So it may be stated that under steady pressure a small continuous current is not painful but becomes so when it pulsates. It becomes more so when it is interrupted and still more so when reversed in direction. It is for this reason that the interrupted current is used in shocking machines and that the alternating current is so deadly. Dr. Morton and others prefer the galvanic current partly for the steady voltage which is characteristic of this current and the small amount of pain accompanying its applications. On the other hand there are those who claim that the Edison current furnishes a practically steady voltage. Theoretically the galvanic current gives the more uniform voltage, but those who use it seem to forget that they annul this virtue of battery power every time they touch the rheostat for increasing the current as is customary in its application.

The Edison current is ordinarily supplied at 110 volts pressure. In my city I have noticed by my own volt meter that during the whole twenty-four hours it does not vary five volts and that during the daytime especially it does not vary two volts. The widest variations occur between 4:00 and 10:00 P. M. Now when this current is used for cataphoresis by the appliance which I have devised for that purpose, by which I get the cataphoric

*Read before the Miss. Valley Dental Society, Cincinnati, April, 1896.

current by a shunt circuit, the variation in voltage at the poles is in proportion, as the cataphoric voltage is to 110. For instance, if the Edison voltage is 110 and the cataphoric voltage averages

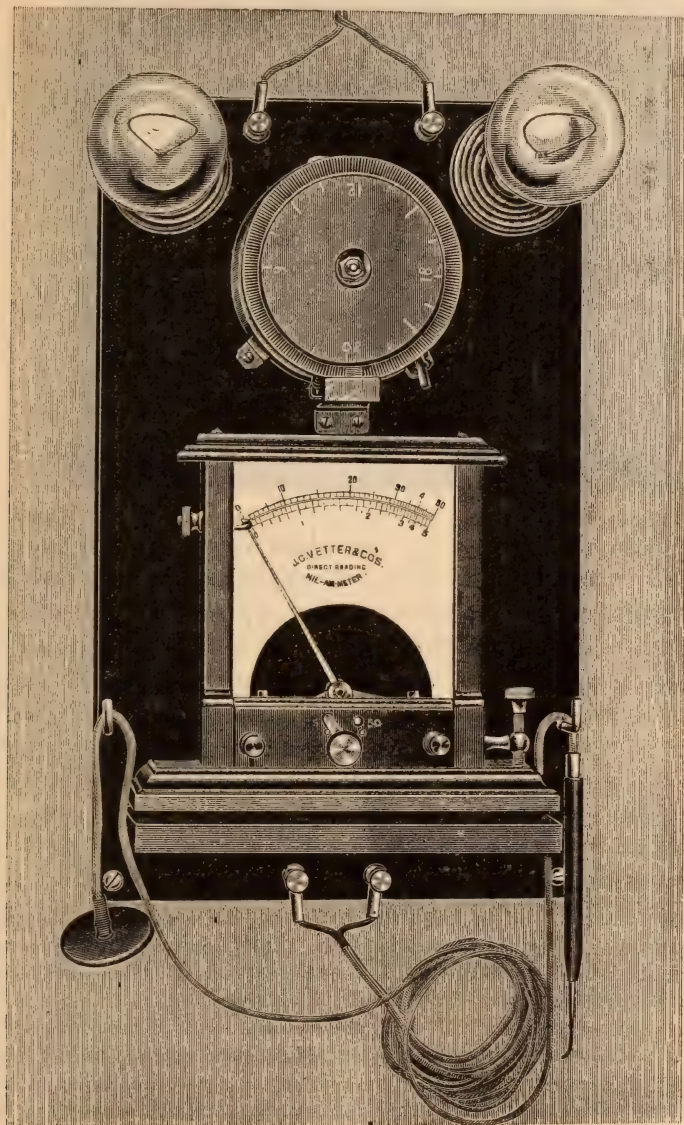


FIG. 1.

ten during the application, it would be necessary that the Edison current vary eleven volts to produce one volt variation in the

shunt or in other words, a variation of say five volts at each manipulation of the rheostat?

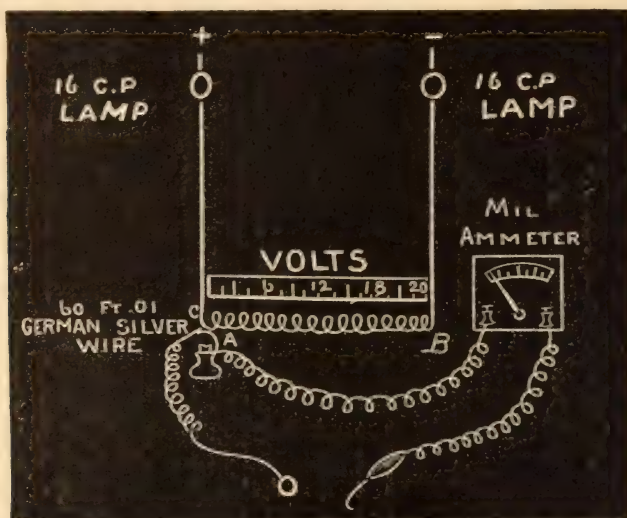


FIG. 2.

Altogether the objection to the Edison circuit that its unequal voltage is perceptibly felt, does not appear as strong as claimed. It may be that where the poles of some appliances are directly in the circuit and in series with high resistance that the variation in the voltage is perceptibly felt, but in the appliance which I here present the variation averages very much less than one volt during an application and this is not perceptible. In many cases it is necessary to increase the pressure two to five volts before the patient feels the increase.

Many of the reports of cases have varied so much from the common electrical formula and from my own observations that

TO THE EDITOR: You will find under separate cover photo and diagrammatic illustration of appliance for cataphoresis. The diagram corresponds with the paper read, but since that time I have completed the clock attachment for accurately turning on the current. This reduces the pain of the application. The wire is wound on the periphery of a four-inch fiber wheel which dips in a cup of mercury to make the contact which is represented by brush A. Instead of this brush moving, the same thing is accomplished by moving the resistance and keeping the brush stationery, which is done by a lock mechanism.

The operator has then only to see that the cavity is kept flooded with the solution during administration.

Very truly,

L. E. CUSTER.

either the measuring instruments were not correct or were not properly used. In one instance a writer speaks of increasing the current without increasing the voltage at the same time, while the resistance remained the same, notwithstanding the fact that electricians have for seventy years been substantiating the law laid down by Dr. Ohm, that the current strength in any circuit is equal to the electro motive force divided by the resistance. It is not possible to increase the current through a constant resistance without increasing the pressure, or to use a common illustration, you cannot increase the flow of water through a pipe of a given size without increasing the pressure.

The wide difference in the amount of current also led to some experiments as to their cause. The enamel consists of about 97 per cent. lime salts, which is a non-conductor of electricity, and the remaining three per cent. is such a small amount that it offers so much resistance as to be practically a non-conductor. This fact, that a sound tooth is covered by a nonconductor of electricity, may have a wider significance than we at first thought would allow and it may have a physiological significance as well. At any rate the fact that enamel is a nonconductor of electricity is an important consideration in cataphoresis.

On the other hand, about one-third of the dentine is made up of animal matter which contains water and is a comparatively good conductor. The matrix of the dentine is almost solid lime structure, and like enamel is a non-conductor. But within the tubule is contained the dentinal fibril which is made up almost entirely of water. It is this that we wish to obtund, and fortunately its large per centage of water makes it a good conductor. When the current is applied it follows the course of these canals to the pulp. Here I will call attention to the importance of enlarging the cavity with the chisel at first, about as it is desired when finished, because the fibrils anastomose so little that the area of anesthesia is confined almost entirely to those tubuli whose mouths open into the cavity. In a long application in a deep cavity, however, the pulp becomes affected and the fibrils supplied to other portions of the crown lose their sensation as deeply down as the pulp itself has been affected.

So then, the enamel being a non-conductor of electricity and the path of the current following the tubuli through the dentine, it is easy to understand why, in some instances, an operator could

use one milliampere, while in another but one-tenth as much at the same voltage. A small exposure of dentine is like a small wire, it offers more resistance than a large cavity or a large wire. In the practical operation of cataphoresis we must consider the path from the positive pole in the cavity to the negative pole at the sponge, to be like a funnel with the small end equal to the area of exposed dentine and the large end the area of the sponge upon the face. No more water can flow through the funnel than can pass through the smaller end, and so no more current can flow than can pass through the exposed tubuli, and the current increases in proportion to the size of the cavity at the same voltage. It is for this reason that an ammeter is not of much practical value for dentine anesthesia. It is often a satisfaction, however, to know how much current is being used in the operation, but if it is to be used for recording and the establishing of tables the size of the cavity must also be tabulated.

Dentine which has been denuded of enamel for a long time will probably offer greater resistance than freshly exposed dentine.

The position of the negative electrode has much to do with the application of the current. The shorter the distance this is placed from the tooth under operation the less voltage will be required to force the current through, and the less will be the variations due to the alleged unequal Edison current. After experiment I find that it requires about three times the voltage when the sponge is held in the hand than when held upon the cheek, so would recommend that the negative pole be placed upon the cheek and held in place by the same appliance which ordinarily holds the rubber dam back. This has been my method, and it is seldom that the voltage exceeds fifteen, while in some accounts I see it very much more than that.

As to the detail of manipulation if it is essential that the current be not broken during the application. This is very likely to occur if the anode is held by the operator. Even if the instrument does not come entirely out of the cavity it is very difficult to hold it perfectly quiet for the ten or fifteen minutes of the application. The least movement is perceptible to the patient, and especially if the cotton is not well saturated. To avoid any such dangers I have devised an anode to be slipped on the ordinary rubber dam clamp. This appliance is so constructed that

the electrode is electrically insulated from the clamp and at the same time is firmly held in position. This allows the operator free to manage the administration of the current. In this connection I might state that appreciating the fact that a gradually increased current is much less painful than one by steps. I hope soon to complete an appliance actuated by clockwork which will meet the requirements of dental cataphoresis.

It may be worth while to call attention to the placing of the anode in the cavity. It is to be inferred from reports that the operator generally places a saturated pellet of cotton in the cavity and then holds the anode upon that. The reverse should be the order. Secure the instrument in the cavity and place a heavily saturated pellet of cotton about it and the instrument will be flooded about by capillary attraction, and any small movement of the instrument will not be perceptible, whereas if it is placed upon the cotton the loss by electrolysis is noticeable and there is greater danger of breaking the current.

The appliance which I have devised for this purpose is made in this manner: one 8 c. p. or preferably two 16 c. p. lamps are used for the main resistance. Two 16 c. p. lamps are preferred only for safety, as a ground would meet with resistance on either wire. In series and between the two lamps is placed a resistance coil of about sixty feet of .01 German silver wire wound in a No. 34 thread cut in a rod of fiber an inch in diameter and seven inches in length. To the wire to the left is attached the wire leading to the cathode. An ammeter may be placed anywhere in this wire. The wire from the anode is attached to a movable brush which slides along in contact with the resistance coil. If the anode is placed in the cavity and the cathode upon the cheek a circuit from the brush A to C will be closed through the patient as well as the one through A to C through the main line. The circuit through the patient is called a shunt circuit. When the brush A is at the left no current flows through the patient because the patient offers so much resistance and there is no resistance between A and C on the main wire, but on moving A from C, the resistance between the two points A and C increases so much that the current divides and a little is sent through the patient. The amount of current flowing through one branch of a divided circuit is inversely proportionate to the resistance of the other so that if the resistance increases in one branch, more current

will be forced through the other. So by this arrangement if A moves toward B and 16 c. p. lamps are used, as illustrated, there will be a range of twenty-four volts from A to B through the patient. If, instead of 16 c. p. lamps, 20 c. p. lamps are used, there will be a range of about thirty volts, and so on.

Such an appliance can be made at a very small cost and since the operator is guided by signs from the patient how much current to use, the volt meter and ammeter are not strictly necessary. The marking of the volt scale can be done by connecting a standard voltmeter at C and at the brush B and marking off the voltage shown at different positions of B. Such a scale is practically as accurate as if a volt meter were used in connection with the instrument.

DISCUSSION.

DR. O. N. HEISE: The subject as presented by Dr. Custer is mainly in its relation to the kind of apparatus used, he does away with the expensive ones now on the market like the Wheeler Fractional Volt Selector, which has been the one mostly used and mentioned in the various articles published on this subject, the cost of this apparatus is \$65.00, the one here spoken of is simplicity itself and every one who so desires can make it for a few dollars, but I hope Dr. Custer will take the trouble and put them on the market.

One of the points in the paper and a very important one, is the practical and successful application of dental cataphoresis, is his calling attention to the non-conductivity of the enamel, if we should attempt to obtund the dentine by placing the positive pole on the enamel and proceed in the usual manner our success would be nil, and only lead us to lose confidence in its usefulness.

I have heard of some parties making the bold statement that they could without any difficulty drive the cocain solution through the enamel, but it was a lack of experience which led them to make such a statement. Another point to which he calls attention is the size of cavity and number dentinal tubuli exposed, has a direct bearing on the success of its application, the dentine itself is a poor conductor of electricity, and the more we can expose or open a cavity by cutting away the enamel, that much more readily and positively can we force the cocain solution through the dentine and thereby produce its obtunding effects.

The subject of cataphoresis and electrolysis is one of vast importance to us and I hope Dr. Custer, who has done so much in this intricate subject of electricity will go on with his experimentation and I know his results will be fruitful and beneficial to the profession.

J. S. CASSIDY: I had hoped that Dr. Custer would have explained in his excellent paper, the connection if any, between cataphoresis and electrolysis. Do compound liquids that are not electrolytes, alcohol for instance, act on tissue cataphoretically? if so, then electrolysis is not necessary to this process. When these non-electrolytes are electro-negative in their nature, would they tend to move through the tissues toward the cathode? if not would it do to reverse the poles, so the anode might attract them? in other words, is the substance paralyzed, somewhat like the individual electro-positive, and electro-negative radicals of an electrolyte? A compound liquid capable of conducting the current will suffer electrolysis, and thus lose its identity. A solution of KI is decomposed by even a weak current, but the freed iodine does not seem disposed to penetrate the tissues, because perhaps, being electro-negative, it is attracted by the positive pole, whilst the potassium does seem to penetrate beyond the field of operation, it being electro-positive, is attracted by the negative pole, as proven by the alkalinity of the more deep-seated parts, leading in that direction.

The decomposition of H_2O_2 is increased in amount by the electric current: O appearing more abundantly and actively,—at the anode,—than by simple ordinary application.

We know that cocain hydrochlorid when employed in cataphoresis, is split up into the free alkaloid cocain, and free HCl. The alkaloid being basic, turns inwardly toward the cathode, and probably produces its physiological effects in reducing sensibility. The HCl remains at the surface.

In case this salt be used in connection with cataphoresis for painless extraction of teeth, will the alkaloid, cocain, penetrate to a sufficient depth for the purpose, by means of the elegant and simple arrangement he has here presented? is a question I would like Dr. Custer to kindly explain.

A Porcelain Inlay Ground to Fit a Cavity in a Tooth.*

BY A. W. HARLAN, M.D., D.D.S., CHICAGO, ILL.

I WOULD not presume to call your attention to such a trivial subject if the whole question of inlays had not occupied such a large place in discussions before societies during the past six or seven years. Rubber inlays, platinum inlays, gold inlays, glass inlays, and baked porcelain inlays, with perhaps some others have had their advocates and do now I suppose in different quarters. The ground porcelain inlay, however, in labial cavities, buccal cavities, and some crown cavities, to my mind furnishes us with something more artistic than any of the other methods of making or setting inlays. It is not a necessity to laboriously grind an inlay to fit the cavity in the tooth; this may be done with much greater expedition by preparing the cavity, taking an impression of it in plaster or modelling composition and getting a cast of the cavity, in copper-amalgam, or Melotte's metal.

The inlay can be ground to fit the cavity to a hair's breadth, with diamond disks; undercuts and grooves may be made to provide for the flowing of the cement to retain the inlay in position. A tooth or bit of porcelain must be selected at least one shade darker than the moist natural tooth. If a porcelain rod is used it must be capable of retaining a high polish, or the difference in color will be too manifest. The edges of the inlay must not be bevelled to much or the cement will show through them. The oxy-phosphates are to be preferred for setting inlays in anterior teeth; gutta-percha or sulphur may be used for crown or buccal cavities in bicuspid or molars, or in pulpless teeth. The objection to gutta-percha is its color and the tendency to deterioration in such a small space as exists between an inlay and a cavity wall.

Canada balsam may be used but it generally requires too much time and it is liable to become yellow from the secretions of the mouth. Nothing is more artistic than a section of a gum tooth with the gum attached to replace a waste spot on the neck of a superior cuspid or superior incisor.

A gold filling always looks badly and the thermal changes are so pronounced that the patient suffers every time the mouth

* Read before the Mississippi Valley Dental Society, April, 1896.

is opened or a drink of water is taken, so that there can be no comparison as to the comfort of such an operation.

To more securely fix the labial inlays a small filling can be built over the edge of the inlay next the gum margins. This is done by grinding from the face of the inlay a depression of such shape that the gold can be adapted to the surface without disturbing the setting of the cement. Before setting an inlay with oxyphosphate, the cavity must be dried with ammonia fortior, and then with alcohol, and the inlay should be clean and dried in the same manner. After the inlay is set I allow at least half an hour before taking the rubber-dam from the tooth. A coat of copal ether varnish is used to protect it for a day or two. The reason I use porcelain in crown cavities in molars, is that when the cavities can be made circular it is easier to fill them; there are no thermal changes and it takes less time than to use gold and it will probably last as long as gold.

Why So Many Fillings Fail.*

BY GUSTAVUS NORTH, A.M., D.D.S., SPRINGVILLE, IA.

WHY so many fillings fail. Not why do so many fillings fail? That would be asking the question, but I will endeavor to give the cause of the failure of many fillings.

After nearly thirty year's practice—being one of the pioneers of Iowa, I have seen dentistry advance from its lowest standard to the present condition, and while we are in the progressive channel and striving for higher attainments, failures still stare us in the face.

Dentists at our societies are often too willing and anxious to boast of their success, and many times those that boast and talk the most know the least; an empty wagon always rattles.

I believe most dentists always endeavor to be honest with their patients and work for their best interest. But many fail in judgment; some men fail where others succeed.

Some dentists will fill a tooth successfully and save it—where others might, with the same material and instruments, fail.

When failures stare us in the face, how many excuses we are

*Read at the Northern Iowa Dental Society.

apt to frame to clear our skirts, lay the blame to the material, or the tooth structure.

If we find the tooth structure failing around a filling, we try to frame some excuse that we are not at fault, and this may be true; but gentlemen, I firmly believe the majority of cases (with the class of fillings we will mention in our essay) is the fault of the operator.

I will be glad when dentists are measured by their skill and practice, not by time and theory. Our text is: Why so many fillings fail. I will endeavor to bring out a few practical points worthy of consideration. If you prepare your cavities and finish your fillings properly, success generally follows. Success does not depend on the material as much as its skillful use.

I will call your attention more especially to the fillings in the approximal surfaces of the incisors, cuspids and molars, which are numbered among the most difficult on account of their location.

We find that many fillings in the incisors and cuspids fail, because some important points are ignored. I will not take the time to give full details of filling, but simply some of the important points.

The teeth should generally be separated by the use of a separator, but not by the use of the file or corundum wheel—these should only be used to smooth the surface. Small approximal cavities cut out and filled as we many times see them, without any separation, are of little value.

The cavities should be prepared, filled and finished so no part of the tooth structure will approximate as Fig. 1 indicates.



Fig. 1.

The gold should be round and full as represented in the cut, and no part of the filling should overlap the tooth structure, but should be finished down even with the enamel of the tooth by the use of finishing strips, etc.

But how often we see fillings dressed down with a flat surface as Fig. 2 indicates, allowing the tooth structure to come together both at the margin of the gum and cutting edge—such fillings are of little value because the tooth structure will soon fail around the filling. If we build incubators, the destructive elements will increase.



Fig. 2.

The approximal fillings in bicuspid and molars are another class that so often fail. There are so many points to take into consideration in the preparation of the cavities and the manner of filling. Prepare all cavities with a strong smooth border. We often find deep undercuts in molars. Fill these undercuts with cement; when sufficiently hardened trim down and prepare the cavity as usual—do not allow any of the cement to be exposed when it is completed. The cavities for all contour fillings should be prepared with a square solid base for the filling to rest on, as the amount of power required for masticating food is far beyond most people's comprehension. This pressure varies from 75 to 150 and sometimes 200 lbs. If the cavities are not properly prepared to stand the pressure in chewing, the filling will be forced from its bearing and look as though it had bulged or expanded.

Where the base of the cavity is dish-shaped or flaring the filling will give and the border of the cavity crumble.

Approximal fillings in bicuspid and molars should be made and finished full and rounding, so no part of the tooth structure can come in contact with its neighbor.

Fig. 3 indicates such a filling.



Fig. 3.

If prepared and filled with flat surfaces and the tooth structure comes in contact with the adjoining tooth, as Fig. 4 indicates, failure will be the result.



Fig. 4.

Gentlemen, you no doubt see as my text indicated, why so many fillings fail, it is not so much the material employed as to know how and where to use it.

Keep the enamel surfaces apart by properly finishing your fillings. Advise frequent use of the tooth brush and tooth pick, and success will crown your efforts.

Impressions.

BY L. P. HASKELL, CHICAGO.

IN the *Dental Office and Laboratory*, for April, in an editorial, appears the following:

"Should the edentulous mouth or gums present a flabby appearance, with the ridge placid and weak, and the whole surface

showing a soft condition, or should the gums be hard and soft at different points, it would be *useless* to look for any adhesion should the impressions of such a mouth *be taken in plaster*." "It may be set down, then, as a certainty that soft mouth or mouths having hard and soft places, should not have the impressions taken with plaster."

This may be a correct *theory*, but like many other theories does not hold good in practice in my experience. I have sometimes thought I had more than my share of just such conditions. The hundreds of plaster casts on my shelves for which plates have been made, will show every possible condition, it would seem, that can be conceived of in the human jaws. Yet successful dentures were made upon them all, upon the various bases, including the heavy continuous gum work, all without air chambers or any appliances for suction, and nothing but plaster impressions used; wax or modelling compounds used in no way. In fact some of the very worst cases, so considered by many dentists who have seen them, have proved very simple, as for instance the one shown in the Feb. *Cosmos*, where what trifle of ridge there was, being simply membrane, except about a half inch where bone had been removed. The center had an abnormal growth of bone. Some dentists who saw the model said they would not have undertaken to make a set of teeth for it, being sure it would not be a success. The impression was plaster; the only change in the model was raising it over the hard palate, as I deem essential in ninety-nine per cent. of cases to prevent rocking. The plate was aluminum, the die Babbitt metal; one impression, one die. Teeth attached with rubber. The denture one inch long in front, in order to restore the contour of the face. The patient had seven sets made previously by several dentists, but said this was the first success and he often "forgot he was wearing artificial teeth." The fact is I prefer just such conditions to the high arch, and unyielding surface. As a rule a plate for such cases, made from a *plaster impression*, taken in the simplest manner possible, the model *raised over the hard center*, a *genuine* Babbitt metal die, (and only one needed), when swaged and simply pressed to its place with the finger, will adhere firmly and give perfect satisfaction, at least that has been my experience for fifty years. "Facts are stubborn things."

Etherial Antiseptic Soap in the Dental Office.

WILLIAM H. MITCHELL, D.D.S., BAYONNE, N. J.

THOSE dentists who are in the full practice of their profession and do all their own work, have looked for years to find some soap that would keep their hands in proper condition for their work at the dental chair; this I can say is found in Johnston's Etherial Liquid Soap.

The dentist who uses this soap can go to his chair not only knowing that his hands are perfectly cleansed but with a feeling of flexibility in his fingers that seems to facilitate his every movement.

Many dentists have abandoned the work in the laboratory for the only reason that their hands become so soiled with the work as to unfit them from appearing neat at the chair. Those who have appreciated these unpleasant features of laboratory work will now find these difficulties removed.

The difficulty of removing the stain produced by handling a flask just from the vulcanizer, and the persistent odor that remains upon the hands after working vulcanized rubber and finishing and polishing a case, as well as the roughness of the skin from handling plaster of Paris, all tend to foster a distaste for the prosthetic work, and the result is he gives up this branch of active dentistry.

After having washed his hands with Johnston's Soap he knows all these unpleasant features are removed; there is no odor on his hands, the absolute asepsis and the softness and smoothness of his skin, he goes to his operating room with a feeling of gratefulness and the absolute knowledge that he has secured the safety of his patients and his own personal comfort.

As a parting medium for flasking cases much time can be saved by using this soap instead of varnish and oil. The case as flaked in the first half is merely soaped and as the menstrum is ethereal the solution is so perfect as to result in the formation of a film of exquisite thinness but of a soapy nature which parts the flask readily and results in producing a thinner plate.

In pouring casts in plaster impressions, this soap is also of value. If desired, the soap can be colored with anilin to form

a line of demarkation, and as the cast fits the impression closer the result can not be other than a closer fitting plate.

For washing mouth-mirrors, scissors, tongue-guards, reflectors, lip-holders, clamps and other instruments, particularly those with joints in their construction, this soap is a perfect cleansing medium.

Aside from the special medicinal and cosmetic uses for Johnston's Soap, it is a quick and perfect eradicator of grease in woolen garments.

To Make a Mil-ammeter for Cataphoresis.

BY L. E. CUSTER, DAYTON, O.

HAVE made some experiments for a cheap galvanometer and find the following to answer all the requirements:

Take an empty Barbour linen thread spool and wind it full of 28 or 30 gauge insulated copper wire. Mount this on a base which can be revolved horizontally. Fix a small jeweled compass on the spool. Now turn the base around till the compass-needle stands at right angles with the axis of the spool and mark off the deflections by testing in series with a standard mil-ammeter. Before each operation adjust the base so that the needle stands at zero.

A Suggestion on the Origin of some Cases of Pyorrhœa Alveolaris.*

BY H. C. MATLACK, D.D.S., CINCINNATI.

WE sometimes find men who will hesitate to advance an opinion which has a direct medical bearing, thinking that to be dogmatic and self-assertive without due reason is illogical and unjustifiable—which presents the spread of some thought and the solution of some great question. The following will be presented for what it is worth. I will try to show that there are *some* cases of pyorrhœa alveolaris whose origin may be syphilitic.

On October 14, 1895, a lady 28 years of age presented herself

*Read before the Mississippi Valley Dental Society, April, 1896.

for treatment on account of looseness of upper front teeth. The four upper incisors were found to be very loose, gums could be lifted from necks of teeth, pus exuding, and the general conditions present which caused a diagnosis of pyorrhœa alveolaris, although no calcareous deposit was found on these or any of the other teeth—pyorrhœa instruments being used to determine whether there was a deposit or not. The lady has been a patient of mine for several years, so that any inclination to salivary calculus or other deposits due to carelessness in cleansing the teeth would have been noticed. About eighteen months ago this lady was married to a young man who was *supposed* to have recovered from a severe attack of syphilis. On questioning the patient, I found that in May, '95, she had a severe case of iritis, which, by the time she was referred to an oculist, had developed into choroiditis. Now, from a number of authors, we find that choroiditis is a frequent disease in all ages, and the most ordinary cause is syphilis, both acquired and hereditary. Upon consulting a number of writers, we find that we have syphilitic iritis, choroiditis, deafness, otorrhœa, or a flow from the ear, syphilitic headache, produced by the virus irritating the membranes of the brain and pericranium; syphilitic complaints in the nose, originating from the immediate application of the virus to the nostrils; syphilitic sore throat; syphilitic swelling of the bones, where may be traced one of the causes of exostosis of the teeth. The following under the head of "Syphilitic Toothache," taken from a work published as early as 1801, shows that even then some diseases of the teeth were attributed to syphilis.

"The syphilitic virus, in affecting the eyes, the mucous membrane of the nose and throat sometimes attack the gums, producing syphilitic toothache, which must be carefully distinguished from that produced by mercury or mercurial odontalgia." Showing that attention was called to the difference between pyalism and some other affection of the gums, perhaps pyorrhœa. No portion of the body is exempt from the attacks of syphilis. Stanley has the following, which shows that there is such a thing as syphilitic periostitis: "Syphilis is a well-recognized cause of inflammation of the periosteum. Systems debilitated by mercury and other drugs are thus rendered particularly susceptible to the influence of cold and moisture, and inflammation of the periosteum of one and oftentimes several, bones is of common occur-

rence. The reason of this is probably because the surfaces of the bones, superficially situated, are most exposed to external influence, that these two are the usual seat of periostitis. Acute inflammation of the periosteum occasions *increase of its vascularity—thickening and softening of its tissues—loosening of its connection with the bone—serous or purulent effusions between it and the bone.*"

Although it appears from a clinical history and pathological changes that the diseased action is marked at the extremities of the long bones, where nutritive changes are the most active, it is not confined to the ends of the long bones, and does not manifest itself in the interior of those parts of the extremities of the bones which are not covered externally by the periosteum, which gives the conclusion that in the majority of cases the periosteum is the tissue, *primarily* involved in the diseased action, the bone being implicated in consequence of the periosteal abnormalities frequently occurring either before or during the eruptive stages of primary syphilis. During these early stages, although the pericementum is affected at the time, the patient is unable to localize the pain, which may be similar to locating an aching tooth; but later on, when the eruptive period of the disease is developed, the gums become excessively tender, on pressure. These conditions being present in the case cited caused a further consideration of the subject. By the kindness of Drs. Evans and Ravogli, the City Hospital was visited, and twenty-three syphilitic patients were examined, eleven having true pyorrhœa. Now, to counteract the thought that there were probably cases of ptyalism, the attending physician stated that although a small amount of mercury was used, no ptyalism had been produced in any case. The case referred to in the beginning was treated in the usual methods; three of the teeth responded readily to the treatment, but the upper right lateral was not cured the last time I saw the patient.

I had intended, to take up another phase of the subject, that is, that some cases of pyorrhœa alveolaris may be of a tubercular origin; but, as this paper was intended to be a suggestion only, the further consideration of the *tubercular idea* will be postponed to some future date,

DISCUSSION.

DR. KNIGHT: The essayist has presented an interesting subject, and one which shows the relations between medicine and dentistry, by demonstrating the need of constitutional treatment in addition to local.

Pyorrhæa alveolaris, although usually arising from local causes alone, is at times associated with and partly caused by constitutional disturbances. Some of the specific and wasting diseases, by lowering the vitality of the tissues, render them much more vulnerable to the injurious effects of local irritants, so that a slight local cause—which acting upon the healthy parts—in possession of their normal resistance, would be inadequate to cause mischief, can do so under depressed or diseased conditions of the parts. The hydra-headed disease to which the essayist has referred, can in some, although in rare instances, be a factor in the origin of a pyorrhœa alveolaris. Most authorities, among whom may be mentioned Bumstead and Hutchinson, agree that a syphilitic periostitis may be primary, that is, it may develop independently of any affection of the neighboring soft parts. Although it is the rule for syphilis to attack that part of the periosteum which covers compact bone, it is not at all surprising that this disease, which assume so many phases, will in some rare instances invade the periosteum of the alveoli, and thus establish a pathological condition in this membrane which will make it exceedingly susceptible to the baneful influences of slight local irritation.

A case, in instance, occurred in a young man who some years ago consulted me in regard to an extremely offensive ozena. For some months previous to this he had been under the care of his dentist, suffering with pyorrhœa alveolaris accompanied with loosening of several of his teeth. Investigation of this patient revealed him to be a victim of congenital syphilis. He was placed upon constitutional treatment for the disease. His improvement was steady and continuous, the pyorrhœa alveolaris which had resisted prolonged local treatment, disappeared, and the teeth became gradually tightened.

DR. FLETCHER: It is a matter of much interest to me to hear this paper and to know that some one has taken up the subject. As to the effects of syphilis as an exciting cause in cases

of pyorrhœa alveolaris, I know very little, but can easily imagine it being one of the causes of this disease. I believe that pyorrhœa, as usually talked of, is considered to arise from a single cause, but, to me, there may be many causes, syphilis being one of these. Another cause mentioned by the essayist takes form in my mind as being one which may be frequent. and that is tuberculosis.

My hypothesis about the matter would be after this manner: We know that the bacilli of tuberculosis (when the patient has become affected) have a tendency to form colonies in various tissues of the body, and especially the endothelial and epithelial membranes, such as the joints, the lungs and the mucous membrane of the air passages, and often in the skin, when it is called lupus; these tubercles are first invisible, when they are called granular, when a little larger they are called crude and then miliary tubercle; the last is so-called from its being about the size of a millet seed and they may ultimately may be much larger.

When the miliary size is reached, the tubercle may become caseous and then begin to break down in the center, not forming true pus, but a watery, milky fluid, just such a discharge as is often found in these pockets about the teeth. No doubt many of you have seen just this character of discharge from them. Now, the physical character of the two discharges being identical leads me to think that many cases of pyorrhœa may be of tubercular origin. This could be determined by microscopical examination of the discharge, and I trust that the essayist, or some one else, may take up this subject from this standpoint and give us some facts and statistics relating the tubercular origin, as well as the syphilitic or other cause of the disease.

ALL SORTS.

Give us a Rest.

Under the above title Dr. F. S. James, in an article in the *Dental Review* says:

“There are hundreds of men in the dental profession who think they cannot possibly close their offices for a day, not even to attend a so-

ciety meeting; day after day, year after year they plod along and leave a name to live, but are dead to the profession, the world and all mankind, except, possibly, a few who, through the busy din of life happen to stumble upon them. They identify themselves with nothing; they pass along the silent paths of obscurity as if they had no object in life or purpose in view; they drop their bodies into the dust, and but few know of their death because they are not identified with the living and active, and their loss is seldom mourned outside their immediate surroundings . . .

"Now then, if we are to be rational and intelligent men, let us strive to keep abreast with the times. With the aid of our societies, and a score or more of dental journals, there is no excuse for a dentist who will not keep himself posted in all that is going on in his special calling. If we are to receive any great good, it is necessary to have something which will stimulate us.

It has been said that if a man would be wise he must 'think, think, think,' but it is hard to think energetically and persistently without something to stimulate thought, and nothing in this line is better than association with others in the same calling.

Dentists who attend society meetings are benefited in this and many other ways as well, and those who do not avail themselves of this manner of stimulation (or rest, we might call it, for that is what it is to most of us), may continue along in the same old rut, and, professionally, they become fossils. This may be their misfortune, but it is more often their own fault, and their intelligent clients are sure to hold them responsible accordingly.

When it is a man's misfortune that he cannot avail himself of the best means of improvements he is to be pitied, for he is an object of sympathy, but in most cases the inability is more imaginary than real. I say, and you will probably agree with me, "Give us a rest."

Formalin in Dentistry.

From the discussions, in N. Y. Institute of Stomatology, printed in the *International*, we extract the following which was presented by Dr. Louis Jack:

"In the use of formalin I have not had much experience. Since the range of employment does not appear to be wide, and as it is a powerful agent, one should be cautious in its application.

Its chief value depends upon its rapid diffusibility, and for this reason it is serviceable for the disinfection of the dentine in canals which have been long subjected to the presence of putrescent material. For

this condition I have used five per cent. solutions with apparent advantage. This would be indicated by my experience to be as strong a solution as it is safe to employ. At this strength it is necessary to protect the adjacent tissues by sealing the saturated pledget in the pulp-chamber and canal, allowing it to remain for a few hours. It is important not to force the solution through the apical foramen: concerning this accident I had a serious experience when, notwithstanding the existence of a fistula, great pain and continued irritation was excited which slowly yielded to treatment. The effect upon the fistulous tract in this case was not curative since the suppuration was not arrested, as would probably have followed the application to the same *situ* of zinc chlorid ten grains to one ounce of water.

In exposures of the pulp, preparatory to conservative treatment, I have frequently used and have found a solution of five per cent. of formalin serviceable where there had long been caries with rather broad exposure. For recent exposures, when the bacterial invasion of the dentine were less, I used two and one-half per cent.

As the value of formaldehyde depends upon its quick diffusibility, therefore its use would appear to be confined to conditions which require penetration of structures. Its irritating properties on the other hand, limit its use as a topical agent for superficial disturbances, as they occur in the mouth. I am not prepared to give an opinion of percentages lower than the smallest rate I have above stated."

Treatment of Pyorrhea Alveolaris.

Dr. R. H. Cool, gives the following treatment in the *Pacific Stomatological Gazette*:

"The first operation consisted of anesthetizing with local anesthetic, then making an artificial opening through the alveolar plate, between the inferior lateral incisor and cuspid, into the pyorrhea pockets, enabling him to obtain perfect drainage, and removing the deposits and carious tissue, both through the opening and the interproximal space, using Younger's pyorrhea instruments and those of his own design, and the dental engine to remove the diseased process. He employed, as medicaments, lactic acid as a solvent, and trikresol ($\frac{1}{2}$ of 1 per cent. solution) as an antiseptic wash, terminating with resorcin to produce adhesive inflammation. The Doctor maintains that one treatment is all that is necessary for cases of this class.

The second operation was the treatment of a pus-discharging pocket in the interproximal space between the superior cuspid and first bicuspid.

The septum of the alveolar process was found to be entirely destroyed. The deposits upon the teeth were completely removed with instruments, engine and lactic acid, and the cavity thoroughly sterilized and dressed with iodoform gauze. Subsequent treatment of the case to be antiseptic washes, and continued dressings, permitting granulations to take place from within."

"In pyorrhea alveolaris there is a deposit of salivary and serumal calculus on the roots of the tooth, which produces an inflammation of the surrounding tissues, causing a congestion of the soft tissue and destroying the osseous tissue. In the interdental spaces, where such conditions exist, a small fistulous opening is generally found leading to denuded process. We go to the foundation and remove all this carious tissue, and it is wonderful how quickly this will have a stimulating effect. There is no sloughing if your instruments are clean. One treatment in 99 cases out of 100 is sufficient. Although heroic treatment, it is not painful. In the second case I presented it was not necessary to make an artificial opening; I think none of us follow exactly the same treatment in every case."

A Few Hints.

Dr. G. V. N. Relyea, gives the following hints in the *Dominion Dental Journal*:

Obstinate Bleeding.—I will relate a case just treated. The servant girl of my family physician called to have an inferior molar extracted. The fangs diverged, which caused it to come very hard, but, taking time and care, I brought it out safely. Here let me say, better be a minute in getting a tooth out than a second in breaking it. My patient left me, and, as usual, I forgot about it until the doctor came in the next morning and informed me that it commenced to bleed three hours after the operation and continued to bleed all night; he also reported much pain combined with the bleeding. Calling to mind the difficulty in extracting, I suspected a fracture of the process. However, after a close examination I found no injury had been done, and after removing the coagulated blood it should have been syringed out with tepid water; but I did the best I could under the circumstances, and, in a word, I arrested the bleeding, and the young lady went out riding the next morning. I will now give my manner of treatment when all the necessities and conveniences are at hand. After the accumulations are removed, roll up a piece of bibulous paper hard, about the size of a small pea. This, fully loaded with wood creosote (not the commercial article, but *pure wood creosote*), force down hard, and continue to pack as you would gold in a cavity of

a tooth. When three-fourths full, roll a larger piece and place in the mouth of the cavity, which must be forced down and left for several hours. Should it show signs of bleeding again, remove and repeat the packing system, and, if properly done, success is certain.

Modelling composition will be found an excellent temporary stopping. It is easily manufactured, is a non-conductor, and the temperature of the mouth keeps it in a condition to be easily removed, and it will wear for weeks and months.

Infiltration Anesthesia.

From an article by Dr. C. S. Payne, published in the *Somatological Gazette*, we make the following extract:

"It is my object to demonstrate that the formulas that I present, together with the method of their introduction, are better than those quoted, as they produce a more profound anesthesia, and for a greater length of time. The formula that I will first use is as follows:

| | | |
|---|---|-----------|
| R | Cocain | grs. I |
| | Sul. Morphia | grs. I |
| | Carbolic Acid | mins. III |
| | Chemically pure German double dis. gly. | drams VI |
| | Aqua distilled. | |

Q. S. to make a two-ounce mixture.

The above is a 1 to 1000 or a 1-10 per cent. solution of cocain.

My investigations have been directly in the line of my profession, and if a syringeful, or portion of a syringeful, is injected into the gum tissue around a tooth to be extracted, and enough force exerted on the piston of the hypodermic syringe to infiltrate the parts and produce a zone of anesthesia, as is evidenced by the whiteness of the part, it is possible to remove the tooth without one particle of pain.

If you study this formula you will find it balanced up as follows: There is just enough distilled water added to the glycerine to make it flow easily through the needle, and my claim for glycerine is that, on account of the thickness of its consistency when forced into a part, it creates as great, or greater distension; and, owing to the fact that it is of an oily nature, it slides, as it were, through the tissue, not causing any pain; and, again, on account of its thick consistency, it is absorbed very slowly, localizing the ingredients of the anesthetic, and giving an anesthesia of longer duration.

There are forty-eight syringefuls in a two-ounce mixture, and, if you removed all the teeth from the superior maxilla at one sitting, you would not use any more in any case than six syringefuls; hence, in six syringe-

fuls there is 1-8 of a grain of morphin, which is the ordinary prescribed dose to allay pain. The object of the morphin is to overcome that pain that occurs about an hour after an extensive case of extracting. There is no heart stimulant used in this formula, on account of the quantity of cocain being so minute that it is not necessary.

Another formula I make known here, which I have used with a great deal of success, especially in cases of abscess, extraction of a single tooth, or a couple of them. It is as follows :

| | | | | | | | |
|---|-----------------|---|---|---|---|---|----------|
| R | Cocain | . | . | . | . | . | grs. v |
| | Sul. Morphia | . | . | . | . | . | grs. i |
| | Boracic Acid | . | . | . | . | . | grs. x |
| | Glycerin | . | . | . | . | . | drams vi |
| | Aqua distilled. | | | | | | |

Q. S. to make a two-ounce mixture.

The above is a 1 to 200 or a 1-2 per cent. solution.

These formulas are practically useless unless the method of their introduction into the part to be anesthetized is carefully followed. Your hypodermic syringe should hold twenty minims, and the needle should not be over 1-4 of an inch in length. The dentist in using an anesthetic uses it almost exclusively for extracting teeth, hence he is injecting into the densest soft tissue in the body; and it requires a great deal more force to infiltrate this gum tissue than it does any other part of the body. The technic is as follows :

Have a clean aseptic syringe, used for nothing else, and a bright needle; have the patient rinse his or her mouth with a 5 per cent. solution of carbolic acid; with the forefinger of the left hand press on the point on the gum about a sixteenth of an inch from the gingival margin, and turning the needle flat side down slide it in, using some force on the piston, and thus keep the anesthetic in front of the needle. The point of the needle being beveled, the anesthetic is forced at an obtuse angle from its opening, so the force of infiltration is in the direction just described, and by turning it you can direct and govern the area of the zone of anesthesia that is produced and is evidenced by its whiteness. For instance, if you were going to extract an upper first bicuspid, and you insert your needle as directed, by turning the flat side of the needle towards the second bi-cuspid, you would infiltrate the tissues in that direction; and if you left the needle in the same puncture and turned the flat side towards the cuspid, you would infiltrate in that direction. While you are injecting lay the forefinger of your left hand above the part being infiltrated at the point where the soft tissue joins the hard gum. If you find a reservoir, as it were, forming in this soft tissue stop and make a new puncture in between the teeth; keep out of this soft

tissue, as it will cause swelling. When you have the tissues on each side of the tooth so thoroughly infiltrated that they become white, that is sufficient and all that is necessary to accomplish a perfect result. After infiltrating the gum around the tooth, I force the flat side of my needle against the tooth, and force it down between the alveolar process and the tooth, and then, by pressure on the piston, force the anesthetic clear to the end of the root.

These formulas are practically harmless in almost any hands, and their efficacy is not due so much to the ingredients used as it is to the infiltration and localizing effect of the glycerin—being due almost entirely to the latter; for I am able to get the wanted result with the glycerine and this combination I cannot get otherwise, although I may use the other ingredients in the same proportions.

The glycerin must be absolutely pure double-distilled, otherwise it retains properties which are very irritating, and will defeat the end you wish to accomplish."

Crown and Bridge Work.

We extract the following, from an article contributed to the *Dental Review*, by Dr. J. P. Carmichael:

"Porcelain facings even though well covered with gold so as not to strike the opposing tooth, will occasionally when biting a hard substance split from their pins, leaving the latter exposed. I have found that the S. S. White facings with long pins are the best to use, and in the event of their breaking, the bridge can be repaired while in the mouth. Where short teeth are found necessary, and are broken by a close bite, the porcelain facing can be replaced in the following manner: By drilling two oblique holes through the gold backing to receive the pins, bending the pins apart to secure the facing (instead of clinching them as is often done) then fill the remaining holes with gold and finish; the tooth will be as secure as a new case. A bridge so treated and carefully finished on the back, cannot be detected as having been repaired.

"I have accompanied this article with a specimen case of the method which I have applied in my practice during the last eight years, having entirely discarded the use of gold bands, and making it a special point to allow no gold to show to indicate the insertion of porcelain teeth. The necessity of this attachment, as you will see upon this model, dawned upon me as the best fastening for such teeth as were too good to cut off and crown, and which is sufficiently strong for all purposes, to be far preferable to capping the entire tooth with gold which has been a common practice with many dentists; with carborundum wheels and enamel

burs I cut grooves as you will notice in the model, allowing so far as possible for the thickness of the gold on the occluding surfaces. I then take a piece of pure plate gold about thirty-four gauge and burnish the same over the inner surface and setting well into the grooves, forming the shape of my attachment; then flowing coin gold over this to the thickness desired for strength, the fastening is placed upon the tooth and properly articulated before taking the impression. As I have already said I have used this method for the past eight years with decided success. I find when these fastenings are carefully put to place with some good cement (I prefer the Justi) they are as durable and strong as could be made by crowning the tooth. Strange as it may seem to some, I assert that to do this work in the mouth is more satisfactory to me, and I never have failed to make equally as tight fittings as is shown by the model, which, after cementing to place, give a perfectly air-and-water-tight union.

“My experience has been that to cover the entire crown of a tooth with a gold cap means sure death to the pulp sooner or later, which perhaps is due to the shutting off of the natural external influences that are necessary to determine the nerve and blood forces that nourishes it. To keep a bridge clean the fittings must be made close, and liberal spaces at the neck of the teeth, directing the patient to at least once a day pass a silk thread over and between the teeth and gum. With a good brush and a flexible quill pick all particles of food can be removed. The importance of all this must be thoroughly impressed on the patient, which, if heeded, will not only afford you great pleasure next time you are called upon to examine the teeth, but you will say bridge work is certainly a success.”

A Strong Bridge.

The following method advanced by Dr. J. C. B. Stephens, is taken from the *Items of Interest*:

“When molars or bicuspids are to be replaced, and would not be plainly in sight, I prepare the teeth or roots as for ordinary cases—swedge and fit crowns. Take an impression, remove crowns and place in the impression, and pour up with plaster and pumice, or some other suitable material that will stand the heat, securing a cast with crowns in place. Then select plain vulcanite teeth, a little smaller than for rubber work, get the circumference of each tooth, with binding wire as a guide for the size of crowns, and swedge a seamless crown for each tooth.

Twist the wire about the pins, letting the ends project two inches from the tooth, and press the tooth, face down, deep into moldine. Then withdraw the tooth by use of the wire, and place over this wire a small

rubber hose, one-half inch long, and pour with Mellott's metal, thus securing a die representing the cusps and buccal surface of the tooth. Place the crowns on a block of lead, and drive the die well inside to stamp the cusps and form the buccal contour. Remove the die, and press or gently tap the tooth firmly inside the crown, and mark with an instrument where to cut away the metal to expose the porcelain, leaving the cusps and edge of the tooth covered, so that the tooth cannot come through this opening. Remove the tooth and cut away the metal, replace again and cut away the surplus metal at the back, and grind both tooth and metal to suit the gums as in articulating. After proper articulation, remove the porcelain and grind a little more from the back to allow for the thickness of backing. Replace the porcelain in the casing and burnish all edges well against the porcelain, articulate and invest for soldering. Before soldering fit inside the casing and against the porcelain a thin backing of pure gold plate or platina and burnish well. Flux and solder crowns, casings, backings and all at once, uniting at all points. After cooling remove from the investment, finish and polish in the usual way. I have used this method for more than a year with the best results. It makes a strong bridge, reinforced at all points, and is easily and quickly constructed. There is less danger of checking the porcelain, and the porcelain cannot leave the bridge.

If a stronger bridge is required secure a die, swedge a piece of metal to fit the cusps on the casing, place and solder before cutting away the casing to expose the porcelain."

A Plea for a Greater Use of Non-Cohesive Gold.

Dr. J. N. Crouse, in the *Dental Digest* says:

"Having read various papers on the use of gold and the filling of proximal cavities, I have been alarmed at the apparent disuse of an old but very reliable method, namely, the use of non-cohesive gold in the form of tightly rolled cylinders, which is the wedge principle. These cylinders are best made from No. 3 or 4 gold foil, which should be non-cohesive. If it has any cohesiveness, that should be removed by placing the foil in a drawer with aqua ammonia for a few hours. To make the cylinders, fold the gold leaf upon itself until you have ribbon a little wider than the depth of the cavity at the cervical margin. Having filed a broach to a triangular peak, lay it on one end of the ribbon, and turn gently, when the gold will be wrapped around the broach, making cylinders a little more in width than the depth of the cavity.

These cylinders are made differently for various cases. In large

cavities the first one or two may contain a sheet of No. 2 foil, the rest less; some rolled quite tightly on the broach, others, less so. With a variety of cylinders thus prepared we are ready to fill well a large proportion of the cavities which occur on the proximal and buccal surfaces of bicuspid and molars, and in one-fourth the time required to make as safe a filling with cohesive gold.

About the same amount of time and painstaking effort is needed in either case prepare the cavity, but it is shaped somewhat differently for non-cohesive gold, and especially for cylinders as described. There are no pits drilled in the dentine from which to start the filling, and the cervical walls need be but little undercut, as strength of anchorage when the cavity is complete is depended upon toward the grinding surface, this being the point where the greatest strain comes on the filling by force of mastication. The lateral walls usually have sufficient undercut when the decay is removed, or if not, slight grooves or undercuts should be made.

With the cavity prepared, and where the walls are of good strength it is a waste of time to use cohesive gold for any except the latter part of the filling, and then only in cases where it includes part of the grinding surface, select a cylinder which when placed lengthwise will extend a little beyond the cervical margin, or in cases of large and deep cavities one large and long enough to rest against the opposing tooth and to entirely cover the cervical margin, and start your filling. In extreme cases two sheets of No. 3 made into one cylinder can be used to good advantage. Generally, however, a large cylinder on each side and a smaller one between the two makes a good foundation. Always remember at this point not to condense each cylinder separately, thus crowding them apart, but a place should be made for the next one, which should be rolled tighter and of a size that will occupy the place as a wedge. Continue until the cavity is about two-thirds full, when, if it is required, cohesive gold can be driven into and between the cylinders at different points, and then the whole mass of gold, being for the most part non-cohesive and so quite ductile, may be forced into every crevice, making a very perfect filling. On top of the cohesive gold already in the cavity we can readily add more and so continue the filling over and onto the grinding surface, contour and finish."

To Quiet Nervous Patients.

In an article in the *Stomatological Gazette*, Dr. R. H. Cool, says:—

"In handling extremely nervous patients I believe it our duty to

use any and all remedies at our disposal in an intelligent manner. Aromatic spirits of ammonia, administered previous to a tedious sitting, will often have a pleasant effect, also anti-kamnia, or combination of anti-kamnia and codein. Phenacetin, or phenacetin and caffeine, acetanelide, anti-pyrin, or, in some cases, morphin sulphate, or, in conjunction with sulphate, atropin, one-fourth grain of the former and one one-hundred and fiftieth grain of the latter can be used advantageously, and a patient that would be a suffering, howling torment to the operator will become as docile and quiet as a lamb."

Dentinal Dehydration.

In discussing a paper read before the Pennsylvania State Dental Society, proceedings of which are printed in the *Cosmos*, Dr. E. C. Kirk says:

"The question of dentinal dehydration—I refer now to teeth with living pulps—can be viewed from two standpoints. One, for the purpose of obtunding excessive sensibility; the other, as an aid in the mechanical operation of inserting fillings. I do not believe that absolute dryness in a cavity, preparatory to filling it, is necessarily a factor in the subsequent integrity of the filling, at least to the extent that we have been inclined to so regard it.

"It is, of course, a necessity for the introduction of gold upon the cohesive principle, but it must be evident, if it were possible to introduce a filling of gold or any material into a cavity so that the cavity is perfectly stopped, that we have accomplished all we can do. I think the proof of that rests in this, that immediately after the filling is inserted and the tooth is subjected to the action of the saliva in the mouth, it reabsorbs sufficient fluid to make it as moist as it would have been if we had simply wiped it out carefully with an absorbent before filling. A filling that is a moisture-tight plug, if such can be inserted under moisture and made mechanically perfect, should be as good a preservative as one which has been inserted with the absolute exclusion of moisture and where the cavity-walls have become moist afterward.

"I believe there is food for thought in the note of warning which Dr. Black has raised with regard to the excessive dehydration of the dentine as a possible source of weakness in tooth-structure. We see in teeth extracted from the mouth a tendency to become brittle and break. I have no doubt that condition is more or less liable to be produced by the artificial production of dryness in cavities. . . .

"With regard to the use of hot air as a means of treatment for

putrescent canals, pulp-chambers, canals of teeth, while it is serviceable up to a certain point, I doubt the extreme efficacy that has been attributed to it. There are other methods which I think are more desirable.

"It seems to me that the prime result to be achieved is to eliminate by some process the putrescent products of pulp decomposition from the canal, and that can be done thoroughly by the use of chemical disinfectants, such as the alkaline solutions of hydrogen dioxid or sodium dioxid.

"My habit in these cases, whether of immediate pulp extirpation or putrescent cases, is to flood the cavity with ethereal solution of hydrogen dioxid or aqueous sodium dioxid. I think an object lesson that would be valuable to every believer in immediate root-filling would be after removing the pulp to flood the canal with hydrogen dioxid in ethereal solution, and consider the result. If any man believes it is safe to stop up a canal with as much animal matter contained in it as is manifested by the action of pyrozone upon such a canal, I think after testing it with pyrozone he would be likely to change his view in regard to it. With this animal matter thoroughly removed it seems impossible for infection to occur.

"Since I have adopted this principle, thoroughly removing by chemical action the contents of the tubuli, whether putrescent or non-infected, I have had better average results than by any process depending upon desiccation and allowing the contents to remain, even though treated antiseptically, because there is always a possibility that in the course of time the small amount of antiseptic used will spend its force, and the contents of the dentinal structure become reinfected through the medium of the general circulation. I would therefore advocate the method of entirely removing by chemical means all the animal matter, rather than desiccation."

Dr. S. H. Guilford: The first point or fact I would like to state as far as dehydration is concerned, is that I consider it perfectly safe. I don't think it has ever done any harm to pulps or tissues. Many of the medicaments used for obtunding sensitive dentine are, I think, frequently dangerous to the pulp, and there is an element of danger associated with their use which does not make us feel entirely comfortable at times in using them.

The second point is as to its efficacy. I think there is no doubt in the world that the best obtundent we have is by turning on a current of warm air a sufficient length of time, whether associated with medicaments or not. . . .

"There is another use for compressed air that does not strictly belong to the subject, and that is for drying roots preparatory to setting crowns or bridges. My cylinder of compressed air is as necessary to me

as my electric current or anything else I have in my office. By having a syringe, the bulb of which can be heated and the pressure regulated by a stop-cock, the young lady assistant holds it, and dries the roots thoroughly till they turn perfectly white, like chalk, while I prepare the crown for setting; by that treatment, when the crown is set I get much better results."

Tooth Bleaching.

Dr. H. C. Register describes his method of bleaching, in the *Dental Cosmos*, as follows:

"I have successfully used a method which I will briefly describe.

"I must confess that when I treated my first incisor by this method I had some anxiety as to the result; but my method was simply this: To use the desiccating process, as I usually do under such conditions, and apply a solution of sulfuric acid,—four to eight per cent.,—according to the density of the tooth; and the tooth being in a thoroughly desiccated condition, I then saturate it with tincture of iodine. A chemical change takes place, and a wonderful improvement immediately follows. The tooth is then treated to an application of ammonia water.

"In reply to a question, Dr. Register said, after using the ammonia, he did not, as a rule, wash out the tooth with water. In cases of very extensive discoloration of the teeth, where the enamel-prisms have become affected by discoloration, after having followed the processes as stated he often used hydrogen peroxid or sodium peroxid to get a further bleaching influence."

Fear.

We are only just beginning to realize the extent to which fear is a causative agent regarding physical conditions. In the past we have been taught that it was a comparatively trivial condition, but now it is recognized as an etiological factor in the production of diseased conditions. If a patient makes up his mind that he is going to be hurt and his fear is strengthened by the presence of the dentist as he goes into the room, you will hurt that patient sure, and it is almost impossible to operate on him at that sitting. It is better therefore to secure his confidence and get an admission that you have not hurt him and will not do so. That is one of the essential features of suggestive practice. I never used to allow a patient to go out of my office, if it were possible in any way, but what I would get an admission from him that the experience was better than he expected; that I did not hurt him.—*W. X. Sudduth in Dental Review.*

Chloro-Percha as an Insulator.

Dr. D. W. Dillehay, states in the *Cosmos*, that before setting crowns or bridges on hypersensitive teeth, it will be found that thoroughly coating the entire surface of the tooth, or teeth, with a film of chloro-percha will prevent the pain experienced from thermal changes in these teeth after being crowned, and will also prevent the pain produced by the acid in the cement while setting the crown.

For Laboratory Use.

“Gold dust washing powder is one of the most useful things for cleaning the hands when they have been soiled by laboratory work. It will at once remove the stain left by vulcanizer flasks, and is widely useful for general laboratory detergent purposes.”—*Dental Practitioner and Advertiser*.

Thermometers.

“Before purchasing a thermometer invert the instrument; the mercury should fall to the end in a solid ‘stick.’ If it separates into several small columns, the tube contains air and will not register accurately. Nine persons out of ten think the mercurial column is round; but this is not the case; it is flat, and the opening in the tube is as small as the finest thread.”—*Dental Practitioner and Advertiser*.

Effect of Clasps on the Teeth.

There is not the slightest doubt but that the clasps are destructive to the teeth they encircle, although it is a question whether that destructive influence could not be reduced very considerably, if not altogether avoided, were the patient to exercise a greater amount of care, in scrupulously cleaning the inside of the clasps.

To do this effectually the clasps should in the first place, be highly polished on their inner surface, and when the case is removed at night, as it always should be, if placed in a tumbler of water, along with a small piece of ordinary common washing soda, the tenacious deposit usually adherent to them is dissolved and it can then be readily removed and the case rendered perfectly clean by a liberal use of soap on the tooth brush in the morning.—*H. Rose in Brit. Journal*,

EDITOR'S NOTES.

A Word to Dental Societies.

At the recent meeting of the Mississippi Valley Dental Society, a donation was voted for the Protective Association. This, we believe, is the first donation to this cause from any dental society, outside of the American and Southern Associations. May 6th, the Lake Erie Dental Society made a like donation.

It seems to us that the move is a good one. If every society in the United States, both state and local, would contribute from \$10 to \$25 each, it would put into the treasury of the Protective Association from \$2,000 to \$3,000. The contributions should be given as donations and not as membership fees and then no mistakes can occur in members of the different dental societies thinking that they are protected on account of their society being a member of the Protective Association. To be protected you must be an individual member.

As the Protective Association has done and is doing so much for the dental profession and as important suits are now pending and it costs money to carry on these suits, it seems very fitting for all dental societies to assist by adding their mite in way of donations.

Improper Credit.

THE May *Items of Interest* shows a little improvement in some ways: There are fewer "clipped articles" in the *Original Contribution* department and a few of the "Practical Points" have been credited to journals from which they were taken. We would like to inquire why it is that in some of these articles proper credit is given and in others, the majority, it is not? We cannot see the consistency of crediting some of them and not others unless it be to make the uncredited articles appear as original contributions.

In paying his respects to us in the April *Items*, Dr. Welch states: "*Gentlemen, we are heaving away with the Items so fast we have hardly time to look back.*"

Would it not be a good plan to stop and look back occasion-

ally, before publishing an article to see how many times it had already appeared in the *Items*? In the May issue, 1896, *Items*, there are no less than fifteen (15) articles that have appeared in previous issues of the *Items* during the past year, and some of them in three and four different numbers. But then we have no complaint to make on this score; if the readers of the *Items* can tolerate these things, we can.

One of the articles, however, we will call attention to: Page 282, "A Separating Medium that Imparts a Smooth Glossy Surface to your Plaster."

This article is here printed without credit to author or journal. The same article will be found in the *Items* of July, 1895, page 440, printed as original matter. In the same issue, page 391, is an article, "Forming an Air-Chamber," by C. J. Hand. This one appears in the *original contribution* department without credit. These two articles together made up an original contribution sent to and published in the May, 1895, *Ohio Dental Journal*. Since being published, without credit, in the *Items*, the articles have been republished in other journals and credited to the *Items*. Does Dr. Welch think this is "justice to all?"

In the April and May issues of the *Items*, a unique plan has been instituted, stating the year in which the articles copied were given to the profession; presumably through some of the journals. For instance on page 238, "Treatment of Pitted Teeth," (copied from somewhere; credit not given) by W. H. Atkinson, 1890, and on page 304, "Pulp Capping," by G. V. Black, in 1870. Now this is a good thing and we do not see why the editor of the *Items* did not "push it along" and state that the article, "Antiseptic Mouth-wash," on page 301, *May Items* 1896, appeared in the *Dental Cosmos*, Nov. 1891; that the article on "Combination Filling," same page, appeared in the *Dental Review* in 1894; that "Dummy Crowns for Bridge-work," page 302, appeared in 1894, etc., etc. In fact there are few articles, if any, in the "Practical Points" and "Items," in the May, 1896, *Items of Interest*, but that appeared in the other journals not later than 1895.

Dr. Welch, in his editorial, April *Items*, gives as an excuse for not crediting journals, from which articles are copied, that the articles are copied from journal to journal and he cannot give credit to all. Why not copy articles direct from their original sources, as most of the other journals do, and not wait until they get as old as those cited above? One credit is sufficient for each article and should be given whether the article be long or short,

New Publications.

DENTAL PATHOLOGY AND PRACTICE, By Frank Abbott, M.D., Professor of Dental Histology, Surgery, and Therapeutics, in the New York College of Dentistry, etc.

Philadelphia:—The S. S. White Dental Manufacturing Co., 1896.

Dr. Abbott is too well known throughout the dental profession to need an introduction. He has for years been one of the leaders and we welcome his new work, believing that it will be read with interest and profit by all.

In the preface the author says:

“To undertake the preparation of a work which should, even approximately, exhaust the topics embraced in the title of this volume would be a task far beyond my intention or even desire, such an exhaustive treatise would assume proportions which would discourage any but the most ardent student in dental surgery. I have therefore aimed simply to present, as concisely as possible, the most common and important pathological conditions found in the oral cavity, with the treatment in each condition which has proven most satisfactory in a practice extending through a long series of years.”

The book has 240 pages, twenty-two chapters and ninety-seven illustrations. The subject matter treats of: The development of Teeth—Odontoblasts in their relation to developing dentine—Growth of enamel—Teeth of the lower jaw at birth—Congenital defects in enamel—Studies of the pathology of enamel of human teeth, with special reference to the etiology of dental caries—Caries of the teeth—Children's teeth and their treatment—Microscopical studies upon the absorption of the roots of temporary teeth—Filling teeth—Exposed pulps in teeth and their treatment—Treatment of pulpless teeth—Alveolar abscess—Diseases of the antrum due to dental complications, and their treatment—Abscesses in the salivary glands—Salivary calculus and pyorrhea alveolaris—Facial neuralgia—Hyperostosis of roots of teeth—Conditions of patients during which severe dental operations should be avoided—Stomatitis: varieties, causes and treatment—Tumors of the jaws—Senile atrophy of the upper jaw, etc.

The typographical work on the book is excellent and the printing and binding are neat; characteristic of this well-known firm.

THE PRINCIPLES OF BACTERIOLOGY: A practical manual for students and practitioners. By A. C. Abbott, M.D., First Assistant, Laboratory of Hygiene, University of Pennsylvania, Philadelphia. Third edition, enlarged and thoroughly revised. Philadelphia: Lea Brothers & Co., Pub., 1896.

We consider this the best general work on bacteriology that we have to-day. It is concisely written in a clear, terse style and treats the subject in a progressive manner. It is just the book for students use, or for the dental practitioner who desires a knowledge of the principles of bacteriology. It is only one year since a second edition appeared which was soon exhausted; this speaks well for the work.

This third edition contains much additional material and is brought thoroughly up to date.

BOOKS RECEIVED.

LEHRBUCH DER CONSERVIRENDEN ZAHNHEILKUNDE, By Prof. W. D. Miller, Berlin, 1896.

Obituary.

DR. P. G. C. HUNT.

DR. HUNT died of heart disease, at the residence of his daughter, in Indianapolis, on April 24th, 1896. The following is from the *Indianapolis Sentinel*, April 25th, 1896: "Indianapolis has lost one of her most prominent citizens and the dental profession of Indiana its foremost exponent in the death of Dr. P. G. C. Hunt. He had been ill for over a month, and, although it was known that there were elements of seriousness about his condition, his death came as a surprise and shock to his friends.

Dr. Hunt was sixty-eight years old. He remained in active practice until this winter, when he took a trip to Florida, where he owns several orange groves. He was a sick man when he re-

turned and his condition never improved. He was born in Champaign county, Ohio, in 1827. In 1833 his mother, who was then a widow, moved to Wayne county, Indiana, where her son attended the "district" school in the winter and in the summer applied himself to the labors of the farm. His elder brother, Dr. David P. Hunt, was at that time practicing dentistry in Indianapolis, and when the lad began to consider the question of a profession in life he naturally concluded to take up the same line.

He entered his brother's office as a student and a few years later, when the latter died, he found himself in the possession of a large practice. He was not long in climbing to the top round in his profession. He possessed an almost inexhaustible store of knowledge bearing upon his profession and he early began the practice of contributing to dental journals. He invented many devices of value to his profession and he was one of the first to prove that teeth can be extracted and afterward replaced in the jaw without impairing their usefulness.

He was an enthusiastic experimentalist and in order to exemplify this theory he one day in the '70s called a number of his friends to his home where the first thing he did was to direct them to the poultry yard. Having attracted their curiosity, he had a drove of half a dozen roosters turned loose, each one of which had human teeth growing in his crest. He considered this a complete exemplification of his doctrine. In 1879 he was made a doctor of dental surgery by the Ohio college of dental surgery, the Indiana college having honored him with the same title the year previous. During the war he was president of the State dental association and ever since the enactment of the law creating the board of dental examiners he had acted as president. His wife, whose maiden name was Hannah Mary Phipps, died in February, 1892. The deceased was a thirty-third degree mason and was very prominent in the order. He leaves four children—Mrs. H. A. Crossland, Miss Luella Hunt, Dr. G. E. Hunt and Mrs. Edward Kingsbury, all living in this city.

MEETING OF DENTISTS.

A meeting of local dentists was held at the office of Dr. T. S. Hacker yesterday afternoon to take some action with reference to the death of Dr. Hunt, who was the oldest practicing dentist in this city. There were present the following: T. S. Hacker,

Merit Wells, Alex. Jameson, William S. Rawls, E. E. Reese, Elmer Smythe, A. J. Morris, Willard Gates, Dr. George, Robert T. Oliver, D. H. Oliver, David B. House, J. B. Morrison, Frank A. Hamilton, J. Q. Bryan, Maurice Raschig and J. E. Cravens.

The following preamble and resolutions were adopted :

"Whereas, The death of Dr. P. G. C. Hunt of this city has removed from the ranks of active dentists one of its foremost and most honored members, therefore, be it

"Resolved, That in the death of Dr. Hunt the dental profession of this city and state has sustained irreparable loss. Dr. Hunt in the highest sense represented the spirit of progress in his chosen profession. His death takes from us the best representative of the self made practitioner. Dr. Hunt early made his influence felt in the national councils of dentistry and his ideas are to be found embalmed in the books of to-day in the schools of dentistry. The history of American dentistry cannot be written without contributing to his praise.

"Resolved, That a copy of these resolutions and note of this meeting be transmitted to the bereaved family of Dr. P. G. C. Hunt, and that the daily papers be requested to publish the same."

A beautiful tribute was ordered to be placed upon the casket. It contained the inscription, "From the Dentists of Indianapolis." It was decided to attend the funeral in a body and to extend invitations to all dentists of the city and vicinity to join them.

National Dental Museum and Library.

THE 36th Annual Meeting of the American Dental Association formally recognized the Army Medical Museum and Library as the National Museum and Library of the dental profession of the United States, and appointed the undersigned a committee to co-operate with the officer in charge of this institution "in enriching its stores of dental literature and museum specimens."

It is quite unnecessary for this committee to enlarge upon the value, to the dental profession and the general public, of a National Collection which would at all times illustrate the past history and present condition of the science and art of dentistry.

It should be amply sufficient, in order to arouse the active interest and elicit the hearty support of every member of the dental profession, to call attention to the fact that the United States Government has established and will permanently maintain such a collection at the National Capital, in connection with similar collections covering every branch of medicine and surgery. At first this institution was limited to military medical subjects, but later greatly broadened its scope until now it is practically a medical depart of the Government, perpetuated under a settled policy maintained by Congressional appropriations, housed in a large building erected for the purpose, extended to cover the whole field of medicine, and opened the public—the intellectual property of all professions and classes, the recognized National Collections of the medical profession.

It is visited by over 50,000 persons, and consulted by over 3,000 students annually.

The Museum contains about 35,000 specimens of which over 12,000 are pathologic.

The Army Medical Library is admittedly, throughout the world, the largest and most complete of its kind in existence. It contains three-fourths of the medical literature of the world and nine-tenths of the medical literature of the past ten years. There is a constant daily addition to its 120,000 bound volumes, 190,000 pamphlets and 1,200 current periodicals. Its literature is not only greater in volume than the medical literature of either the Library of the British Museum or the National Library of France, but covers a wider field and forms a better practical reference and working collection. Its value is greatly enhanced by an unequalled index-catalogue of 18,000 pages.

The dental section of this library contains a large and choice collection of the recent literature in English and other languages relating to dentistry, and our effort should be to make this section complete, especially with regard to the rarer publications which disclose the conditions from which modern dentistry developed and reveal the history of the operation of the forces and factors concerned in the evolution of a distinct profession. While most of the current literature is bought, the contributions of publishers and authors would permit the money available for the purchase of their works to be used in other directions equally as essential to the purposes of the institution.

The Army Medical Museum contains but the nucleus of a collection of specimens relating to dentistry, which is as unfortunate as it is strange, since so much of dentistry can be illustrated by models, drawings, photographs, etc. It cannot be said that the dental profession is lacking in zeal for its advancement, but it must be confessed that it has too long failed to utilize this opportunity to accumulate, preserve and exhibit, at Government expense, the evidence of its progress and attainments. Many thousands form their estimates of the various branches of medicine and surgery by comparing here their exhibited specimens. For this reason, as well as for the educational advancement of the dental profession, we should make this collection the greatest object-lesson in the world.

This institution could easily be made of great advantage to the dental colleges as a "clearing house" for the exchange of duplicate literature, and of objects, drawings, casts, etc., used in teaching. It would not be an extension of its purposes to illustrate here the methods, apparatus and appliances used in college training.

Without attempting to detail the kind of specimens needed, it is safe to say that anything illustrative of any part of the subject of dentistry, or which would, in connection with other specimens, throw light on the etiology, pathology or treatment of the disease and deformities of the teeth, jaws, etc., would attain a greatly enhanced value by being placed here as parts of a complete collection.

Every specimen contributed should bear a correct label, a concise history, the name of the contributor, and addressed, prepaid, to the Army Medical Museum and Library, Washington.

Never was there such opportunity freely offered a profession to demonstrate its value to acquire a higher rank among the learned callings, to acquaint the professions and the general public with its achievements and to secure the preservation and exhibition of all things pertaining to it of present or future historical and educational value.

We appeal to the dental societies and to individual members of the profession to regard this interest as one of transcendent importance, and, leaving it not solely to the hands of medical men, to so promote it that the hand and mind of the profession may be seen in the result of the efforts to make the dental sec-

tion completely illustrate all matters within the broadened scope of dentistry.

We invite correspondence and will otherwise, in any way possible, serve you in furthering the object for which the American Dental Association appointed us.

WM. S. DONNALLY, Washington, D. C.;

J. TAFT, Cincinnati, O.;

L. D. SHEPARD, Boston, Mass.;

J. H. McKELLOPS, St. Louis, Mo.

HENRY W. MORGAN, Nashville, Tenn.

Committee.

SOCIETIES.

Northern Ohio Dental Society.

THE thirty-seventh annual meeting will be held in the Hollenden hotel, Cleveland, June 16, 17, 18, 1896.

Following is the program :

1. President's Address, Dr. Henry Barnes, Cleveland.
2. Is it a fact that Dental Caries is more prevalent in the Left Side of the Mouth than the Right? If so why?
Dr. F. S. Whitslar, Youngstown.
3. The Dental Pulp and its Treatment,
Dr. W. A. Siddall, Cleveland.
4. The Proper Cleansing of the Teeth During Health,
Dr. S. D. Potterf, Defiance.
5. Articulation of Artificial Teeth, Dr. D. A. Allen, Toledo.
6. Pyorrhœa Alveolaris, its Treatment both Local and Systemic,
Dr. J. H. Wible, Canton.
7. A Method of Implantation, Dr. E. B. Lodge, Cleveland.
8. Report of a Case of Alveolar Abscess Opening into the Antrum, its Treatment and Cure,
Dr. W. Buzzell, Port Clinton.
9. Voluntary Papers.
10. Incidents of Office Practice.

CLINICS.

1. Combination Plate and Bridgework,
Dr. A. S. Condit, Findlay.

2. Bleaching Teeth by Cataphoresis,
Dr. Henry Barnes, Cleveland.
 3. Electric Appliances, Dr. L. E. Custer, Dayton.
 4. Anesthetic Pencil, Dr. Frank Creager, Fremont.
 5. Obtunding Sensitive Dentine by Cataphoresis,
Dr. H. L. Ambler, Cleveland.
 6. Swaging Plate, (Parker method) Dr. D. A. Allen, Toledo.
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Colorado State Board of Dental Examiners.

THE Colorado State Board of Dental Examiners will hold their next meeting at the office of W. E. Griswold, Mack Block, Denver, Colorado, June 9th, 10th & 11th. All applicants should address D. Murray, Secretary, Mack Block, Denver, Colo.

Wisconsin State Dental Society.

THE twenty-sixth annual meeting of the Wisconsin State Dental Society will be held in the Senate chamber, Madison, Wis., July 21st, 22d & 23d, 1896. An exceedingly interesting program is being prepared by the Executive committee and a most earnest invitation is extended to all reputable practitioners in the State who are not already members to come and unite with us.

W. H. CARSON, Sec'y.

Indiana State Dental Society.

THE thirty-eighth annual meeting of the Indiana State Dental Society will be held at Indianapolis, Ind., commencing Tuesday June 30th, at 10:00 A. M., in the Indiana Dental College building.

All members of the profession are invited to attend.

The State Board of Dental Examiners meets at the same time and place.

M. A. MASON, D.D.S., Secretary,
Fort Wayne, Ind.

Union Dental Meeting.

THE joint meeting of the State Associations of Iowa, Nebraska, Kansas and Missouri, to be held at Excelsior Springs, Mo. June 23-26, promises to one of the largest and best meetings ever held in the west.

The most eminent dentists of the four states will be present and participate.

That paragon of summer hotels "The Elms," has given us greatly reduced rates and all railroads give us one and one-third rates on certificate plan. Be sure to get receipt for amounts paid in going; if you travel over more than one road, take certificate from *each*. It will be impossible to get reduced rates returning without certificates. S. C. A. RUBEY, Sec'y, Clinton, Mo.

Eastern Ontario Dental Association.

THE seventeenth annual meeting of the Eastern Ontario Dental Association, will be held this year at Ottawa, on June 9th, 10th and 11th.

It is desired to have as many attend as possible.

GEO. H. WEAGANT, Secretary.

OUR AFTERMATH.

MEMORIAL EXERCISES.—Dr. James Taylor memorial exercises were held in Cincinnati, April 16th, 1896, the occasion being the fiftieth anniversary of the Ohio College of Dental Surgery. A memorial tablet was erected to the memory of Dr. James Taylor, founder of the college. The exercises were as follows: Music, Glee Club; Invocation, Rev. A. A. E. Taylor; Address by A. W. Harlan, for the Alumni Association; Address by James I. Taylor, for the Board of Trustees; Address by J. Taft, giving a sketch of the life of James Taylor; Music, Glee Club; Address, J. S. Cassidy, for the Faculty; Music, Glee Club; Unveiling of the memorial tablet.

COMPLIMENTARY DINNER.—The faculty of the Ohio College of Dental Surgery gave a most enjoyable dinner at the University Club on the evening of April 16th, to: Drs. J. Taft, J. E. Cravens, W. B. Ames, N. S. Hoff, C. I. Keely, A. W. Harlan, J. I. Taylor, L. P. Bethel, H. A. Smith, J. S. Cassidy, L. E. Custer, C. M. Wright, Grant Molyneaux and H. T. Smith.

THE OHIO DENTAL JOURNAL.

VOL. XVI.

JULY, 1896.

No. 7.

CONTRIBUTIONS.

A Water Rheostat for Cataphoresis.

BY W. H. HERSH, D.D.S., PIQUA, O.

WATER is supposed by many to be a good conductor of electricity, and while it is true that *impure* water is a fairly good conductor of electrical energy, yet it is a truth equally well established that a column of *absolutely pure water* is practically a non-conductor to currents whose voltage does not exceed 110.

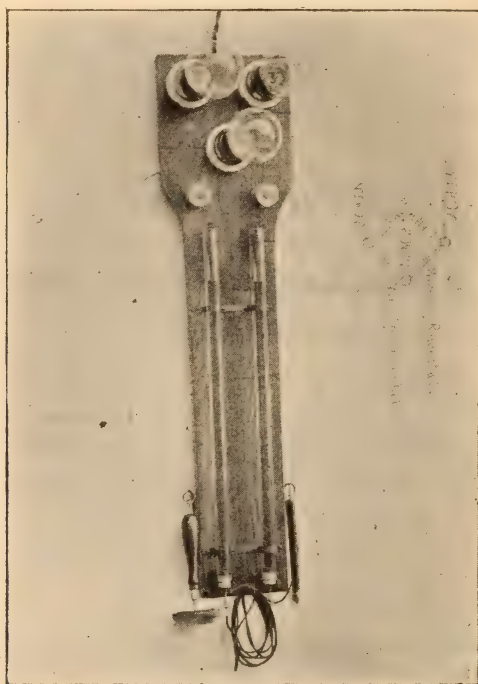
Keeping this in mind and knowing at the same time that the water may be changed from a higher to a lower degree of resistance by simply adding a little sulfuric acid, the acid making the water a better conductor, we recognize at once that in water we have a resistance which is safe, reliable, and efficient, and one which can be changed at will to suit any class of work from the electric oven or motor down to cataphoresis. So much has been written and said recently about cataphoric procedures that nearly every dentist acquainted with the theory and process is very anxious to make use of it, and while a few are doing so now to their great satisfaction, the great majority are prevented from using it either from not having a suitable current, or the fact that apparatus which has been put on the market that will control

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the 110 volt continuous current satisfactorily, is correspondingly expensive.

To those who are looking for a simple, reliable and cheap instrument, we offer the water rheostat made in such a simple form that any dentist knowing enough to use cataphoresis in his work, will have no trouble in making or having made an instrument as described in this article.

First, we will suppose that we have the 110 volt Edison



current, as this is the one commonly used and best adapted to our work. In order to use it for cataphoric work, it will be necessary to have some other resistance besides the rheostat, and for this we use lamps. In the mains connect in series three 10 C. P. lamps, then between the first and second lamp attach a wire which leads to one side of the rheostat, and between the second and third lamps connect another wire, which leads to the other side of the rheostat.

This gives you a shunt current which you should use in the

relief of sensitive dentine, but for bleaching and sterilizing, unscrew lamp No. 2, which throws the rheostat in series with the main current, and will furnish all the energy ever needed for this work.

To make the rheostat, first select two glass tubes, 15 inches long and $\frac{1}{2}$ inch inside diameter and about $\frac{1}{8}$ inch thick, and with a corundum wheel bevel off all sharp edges at the ends of the tubes, then take two rubber corks, the proper size, and drill a hole lengthwise through them $\frac{1}{8}$ inch in diameter and have turned two little brass pieces the shape of a "T," the upper part being just small enough to pass inside of the glass tube, and the rest turned down so it will fit snugly into the rubber cork. In the lower end of the brass piece have a small hole drilled to receive the key of the conducting cord to electrode. Put the "T" shaped brass piece in the rubber cork and press the cork firmly into the glass tube, and you will have a water-tight seal for the tube and one pole of the rheostat finished.

Next, have two small weights turned 2 inches long, the largest part being $\frac{3}{8}$ inch in diameter and tapering to a very fine point. The object of having them tapering, is that when the weights first touch the water but little surface is in contact with the water, therefore but little current can pass through, as the more surface there is in contact with the water, the more current will pass through, even though the distance between the poles and purity of the water remains the same.

Next, have two small pulleys turned out of brass, which will serve as small windlasses in raising and lowering the weights through the water. Let the pins which hold these two pulleys in place extend through the wood base and make connection with the two wires coming from the lamps.

Procure a very fine brass chain and solder one end to the brass weight and the other end to the pulley, then attach the tubes to a wood base and fill them with the very best distilled water, as ordinary water would not afford enough resistance, and the rheostat is ready for work.

Place the positive pole or electrode in the tooth with the medicine you wish to use, and the negative pole in the hand or on the cheek, and lower the weights until they just touch the water, then lower one weight at a time into the water until the desired amount of current is obtained.

We claim for this rheostat—

First, simplicity ; every part being visible, thus being exempt from any sealed mystery feature.

Second, fineness of adjustment not found in any higher degree in the most complicated or expensive apparatus.

Third, cheapness ; costing but little to make, yet safe, reliable and efficient.

A Safe and Serviceable Detachable Bridge-Denture.*

BY B. J. CIGRAND, B.S., D.D.S., CHICAGO, ILL.

It is to be regretted that nearly all new inventions or recent discoveries in the arts, suffer much at the hands of the over-zealous and enthusiastic. Too frequently are these new departures over-estimated and invariably too readily accepted. Often have important remedies or appliances fallen to the hands of the unappreciative and those uninitiated in the real mission of the drug or instrument and through their unwarranted enthusiasm, brought the serviceable find into disrepute and eventual disuse. Few new discoveries have combated the gauntlet of "professional enthusiasm" as has bridge-work, or better called "continuous-crown-work." That this system of restoring lost dental organs has suffered much through its too prevalent application, no one familiar with its history will venture to dispute. Advances in the arts and sciences must be of a slow growth, built upon facts ; when if of a too rapid development, and lacking necessary foundation the superstructure must in consequence be subjected empiricism.

In the history of all advancement, movements of a more or less reactionary nature are chronicled. In the useful arts especially, do we frequently notice a return to methods and forms formerly employed, but long since discarded and forgotten. So, too, in the science of dental surgery, we find modes of treatment and manner of practice once in vogue, but long fallen into disuse, revived with improvements and modifications that stamp them as practicably rediscoveries. These movements are not to be hailed as retrogressive, but on the contrary, are to be welcomed as a safe criterion of marked advance.

* Read at Southwestern Michigan Dental Society, 1896.

The conservative practitioners throughout this broad land have gone back, so to speak, to small bridges; they have recognized the errors of the enthusiasts and have profited by their liberal ventures.

The time was not long since when every dentist prided himself on the great span of the bridge; he did not consider himself scientific or practical unless he ventured to restore by means of bridge-work, an entire upper denture, and anchor same on three or four natural teeth, and he felt he was ancient if he produced a vulcanite, aluminum or gold denture. Thus fellow practitioners, was the status of prosthetic work a few years since. Time, that great assayist of all that is good and pure, has so refined and cleansed this department of dental prosthetics, that only those who are familiar with the underlying principles of both the art and science can attain success. The days of "wild-cat bridge-work" has been relegated to the past and only empirics and charlatans are still crying in its behalf. In our profession, like in all organized society, inclusive of governments, the conservative are the "pillar of strength" or the power behind the throne.

Bridge work has advanced in theory only when it has advanced in practice. In its twofold evolution it absorbs from every available source whatever tends to broaden its art or perfect its science; it calls to its aid anatomy, chemistry, therapeutics, surgery, physiology, pathology, mechanics and sculpture, with each of which it is directly related; and the practitioners who have become most proficient and successful in the application are those who have mastered a full curriculum of dental science.

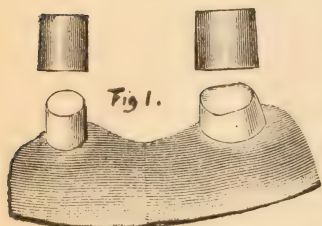
There will always be those who subscribe themselves among the radical and who are incessantly excusing the old—no matter how serviceable or appropriate—and inviting the recent, regardless of how ineffectual or disastrous.

I am pleased to meet with the conservative elements of the dental profession of southern Michigan and assure you I am gratified to know that the days of "enthusiastic bridge work" belong to the immediate past.

My theme, a brief one, concerns bridge work, but in a most conservative sense, so much so that the bridge is a removable one. I need not relate to you the many objections to large or permanent bridges, as I full well know that a qualified body of practitioners is familiar with the numerous shortcomings; but

privilege me to remind you of some of the more important demerits of the system and point out if possible why I much prefer detachable bridges or clasp-dentures.

In the first place, our knowledge of hygienic laws forbids us from recommending the large permanent bridge; secondly, our sad experience in repairing same has led us to a proper appreciation of the forces of mastication and occlusion, and we have learned that a strong bridge must be firmly anchored, and this latter point is the one which recent experiments and investigation have indelibly engraved upon our knowledge of practice.



The evident advantages of continuous crown-work have stimulated the inventive genius of dental prosthesis to improve the methods and forms of construction and extend its application, thus permitting the versed practitioner to insert on a conservative basis a crowned substitute, which in respect to usefulness, appearance, durability and comfort, compares well with nature's master stroke.

Removable bridges are of late receiving much attention and few matters pertaining to our professional service deserves greater notice. Of the varied evolution of the detachable bridge-venture I refrain from speaking, as in the description of the one I gave you, I will occupy some little of your valued time.

The method I recommend relates to buccal dentures, and since we are most frequently called upon to replace buccal teeth, you will readily recognize the deserved importance attached to this subject.

I have many of these dentures in service and am convinced that from the point of hygiene and comfort they are a decided success.

The buccal cases to which I refer in particular, are those where the second bicuspid and first molar are missing, in either

the upper or lower jaw, and where the adjoining teeth are possibly affected by decay. The method of construction is simple and there are many cases to which the system is applicable. The case in question, an upper right, Fig. 1—trim down the first bicuspid and if necessary devitalize same, and give it the shape of an ovoid pillar. Then proceed to treat the second molar likewise, shaping it into a cylindrical pillar. Then produce gold telescopes for these prepared pillars and cement them in position. Next construct a gold bicuspid and molar crown having a solid cusp and of such a shape as to perfectly envelop the golden pillars. Position these crowns and take an impression and the maxillary antagonism, and proceed to swage a gold saddle connecting the two gold crowns as in Fig. 2. Now solder the saddle to the crowns and proceed to occlude the artificial second bicuspid and first molar (tipping same with gold cusps); wax same into proper position and after investing the case in the usual manner, join the entirety with gold solder; finish up as your judgment well directs.

If it is desired to construct the same detachable bridge-denture and employ vulcanite to hold the artificial substitutes, the process of construction is slightly different. In this event the earlier stages of construction are the same as already described, differing only subsequent to attaching the saddle to the two gold crowns. Several platinum pins are anchored in the gold bicuspid and molar crowns and a bar of silver, acting as a truss, soldered into a position as will not interfere with the setting up of the plain teeth.

After waxing up the case, flask it and pack pink rubber on the buccal surface and maroon on the palatal; vulcanize and finish as a metallo-vulcanite denture.

The various modifications necessary to adapt this method to individual cases will readily present themselves to the conservative practitioners.

I do not wish to be understood as inferring that the method I suggest is entirely original, for few inventions are, but I trust you will believe that this process of construction is a decided improvement over the methods in use heretofore. And if I shall have interested you in this mode of dental substitution and awakened a desire to encourage in your practice its application, I feel fully satisfied that my paper has accomplished all that was intended.

A Hint.

BY DR. F. E. JUDSON, ANTIGO, WIS.

IN preparing a tooth for the reception of a porcelain crown (Logan or Richmond), before excising the natural crown, if you will take a piece of French rubber tubing, about one-eighth inch wide and a little smaller than the tooth to be crowned, carefully work it up on the neck of the tooth and as close to the gum as you can get without causing too much pain, allowing the patient to wear it for forty-eight hours, you can then face the root off under the gum line without laceration, hemorrhage, or discomfort to your patient, which I consider quite an advantage in doing a nice piece of crown work.

If natural crown is broken off build down with cement sufficient to give room to adjust rubber tube.

Electricity.—Its Use for Producing Local Anesthesia by Cataphoresis.*

BY DR. W. I. CARIS, KENT, O.

THE subject of cataphoresis has been prominent of late, and is the all-talked of subject of the better or more advanced part of our profession. All are anxious to know more about the use of electricity in this direction, and what may be accomplished with an electrical current in connection with certain medicines in the way of producing local anesthesia..

For some time past I have been experimenting with electricity and certain medicines for obtunding sensitive dentine and to get, if possible, a perfect instrument for controlling the current during the operation.

I have had quite an extensive experience, at least, extending over considerable time, with some very gratifying results, which I will relate.

It is my desire, in this paper, to describe and explain my own

* Read at Lake Erie Dental Society, Cambridge, Pa., May 5th, 1896.

apparatus to you, and the appliances and medicines used, and the mode of operating the same in cataphoresis. The apparatus or instrument consists of cell batteries and a current controller, which is the all-important part in producing cataphoresis—perfect current control. I use galvanic continuous or direct current.

My experience in producing cataphoresis is that the uncertainty of the current and its absolute control has heretofore been the only obstacle. It matters not how the current is produced only so you have a continuous current wholly under your control (only as a matter of convenience and safety). With this you have then but to determine your polarity, which is easily done by a galvanometer or moistened litmus-paper, when the current is obtained from a source that you cannot trace back to determine the same, but with cell batteries you can easily determine your polarity, the zinc producing the cathode or negative current and the carbon or copper producing the anode or positive current. The best description which I have discovered in my researches as to the difference in current is by Faraday, which is as follows: "Anode, the positive pole of an electrical battery, or more strictly the path by which the current passes out and enters the electrolyte on the way to the other pole (opposite). Cathode, or negative, the part of the galvanic battery by which the electrical current leaves substances through which it passes on the surface at which the electrical current passes out of the electrolyte."

It occurs to me from the above description that if the polarity of the current is understood and the controller is perfect, it is just as simple and just as easy to flow the current in a given direction as it is to force water through a hose having a sufficient pressure behind it. With electricity you can increase the voltage, which gives you tension and force, or increase the amperage gives you quantity, but does not increase the force.

Voltage—tension; amperage—quantity.

In producing cataphoresis we use the current as the force to drive, locate or deposit our medicine. This is the action of the electrical current, and we depend upon our medicines to do the anesthetic part of the work. In using guaiacol with cocain (have used creosote), or what is termed guaia-cocain, I find that guaiacol is not so good a conductor of electricity as cocain, and not so readily absorbed. It therefore acts as a vehicle for the cocain

and holds it in check, retards its absorption, thereby localizing the action of the cocain and adds its own anesthetic effect, holds it in solution, prevents its absorption into the system and prevents its diffusion into the circulation, thereby prevents all the toxic effects that we usually see with hypodermic injections of cocain. I am using and have here Dr. Morton's formula of guaia-cocain, for obtunding sensitive dentine.

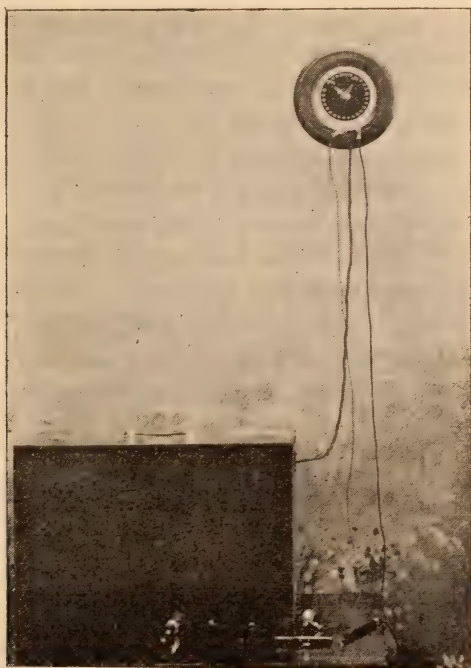
R Guaiacol, 1 dram.

Cocain hydrochlorate, gr. v. m.

For bleaching teeth I use 25 % pyrozone, my cathode electrode No. 1 being adjusted, I adjust the dam, clean cavity thoroughly, then apply 25 % pyrozone on pellets of cotton in cavity of tooth, then make my contact with electrode No. 2, using a good strong current, as strong as your patient will bear without experiencing any unpleasant sensation; continue current for some minutes. It depends wholly on the case as to time required. Rinse cavity with warm water, dry and fill.

For crown, bridge setting or extraction, I use a local anesthetic with current. The mode of using this apparatus for producing cataphoresis of a tooth is wholly in the controller. After adjusting the electrodes, I first apply the cathode electrode No. 1, which is moistened in salt water, to the side of the face on which the tooth to be operated on is located, just in front of the ear, on a line where a pencil would come, placed on the ear as is often carried, or back of the neck, or have the patient hold it in the hand. It matters not so much where contact is made farther than this: the shorter the circuit the less the resistance, and consequently the less current will be required to accomplish the result; however, I prefer the contact just in front of the ear. After having adjusted the cathode electrode No. 1, adjust the dam and if any metal fillings would come in contact, insulate them well with chloropercha, or hot wax, or a good coat of sandarach varnish, then with a chisel, or some suitable instrument, get free access to the cavity. After thoroughly drying the cavity, wrap fibers of cotton on the anode electrode No. 2, which is a small platinum pointed instrument, well insulated; moisten the cotton with guaia-cocain and apply to cavity in tooth or teeth to be extracted, or roll up a small pellet of cotton, saturate with guaia-cocain, place it in the cavity and then apply the anode electrode No. 2 to the cotton in the cavity. All being in readiness,

turn on a slight current of electricity, commencing at zero and increasing the current gradually until the patient experiences a slight sensation from the current, which in a few moments will subside; then increase current until you reach the figure on the dial marked voltage 6, 8 or 10, or sometimes higher; it depends upon the condition of the tooth and patient; continuing the con-



tact at the highest point from 4 to 5 minutes, and you have consumed from 8 to 10 minutes in producing this anesthetic effect. Should your patient experience a disagreeable sensation, use less voltage and increase amperage, by moving pointer to 2, 3 or 4, as indicated on dial marked amperage. Care should be taken after having applied the increased current, not to remove electrode from contact with the saturated cotton, for in breaking or making the circuit you will cause pain. If you desire more of the guaiacocain, take an ordinary dropper and add a drop or two more without removing electrode from contact with cotton; after you have got it to the highest tension required, gradually reduce current by reversing the movement of your controller. Turn both

voltage and amperage back gradually to zero, as indicated on the dial. The pointers on dial should always be at zero when not in circuit or not in use, then no accident can occur to patient, operator or instrument. I then remove cotton from cavity, dry thoroughly and proceed with the preparation of the cavity in the ordinary manner. If the decay is of a thick, tough, leathery consistency, as we sometimes find in the bottom of a molar cavity, you will find it a very imperfect conductor of electricity, and you may have to remove the decayed dentine after first contact and repeat the operation, but as a general thing one application is all that will be required to produce the anesthetic effect with this appliance. From my experience in cataphoresis, I find that the electrical current acts as the power or force, that guaiacol as the vehicle, and the cocain as the anesthetic or worker. The guaiacol also adds its anesthetic effect. Care must, however, be taken so as not to expose the nerve in excavating. Remember you have complete anesthesia of the tooth and there is nothing to give you warning as you approach the nerve. Judgment must be used in this operation, the same as in all delicate operations, or as it is always used at the hands of a good, careful operator; for we find some people far more susceptible to the electrical current than others. The young, as a general thing, are more susceptible than the aged, and we also find great difference in different temperaments and a great difference in the same person at different times under different conditions of the system. What would be a slight tickling sensation to some, would be very unpleasant to others. This can be determined, however, by watching the patients closely, for they are generally good indicators of pain, especially where they are expecting it. For crown, bridge setting or extraction, I use electrode No. 3, placing my cotton or bibulous paper in the cupped end of electrode No. 3, moistened with an anesthetic or 20 to 25 % cocain solution. Apply to the mucus membrane to be operated upon, 7 to 10 minutes, using a good strong current. For a more complete description, the medicine in producing anesthesia in a tooth, acts in connection with the electric current the same as the electrical current acts upon the material and articles in an electroplating bath. The electroplater takes his silver or nickel and places it in his bath with the anode attached, and with the cathode he attaches the article to be plated; now he applies his current, the current drives the silver

or nickel from the anode through the bath and deposits it on the article to be plated, which is the terminal end of the cathode. This, I find to be the action of medicines in connection with an electrical current in the human body. Take, if you please, the body as the bath, take the medicine as the material, and the tooth as the article to be plated, your electrodes being adjusted, you have the same action or the same force that the electro-plater has in his bath, excepting that you do not drive your material as far as he, but on the same line in the same direction, that is carried toward the cathode pole. Guaiacol being a non-conductor and the tooth rendering great resistance by reason of its density, retards the absorption and thereby localizes or deposits the medicine at a less distance from the anode pole than otherwise would be. We complete our deposit in from 7 to 20 minutes that the electro-plater would require from 3 to 5 hours.

I make this comparison that I may be better understood. We save time, pain and patience, with this operation. You would consume more time with the hot, air syringe and reasoning and making explanations to your patient than it takes to thoroughly anesthetize a tooth.

I use the dry cell batteries for my current; they are more convenient, always at hand, nothing to give out or go wrong, excepting exhausting a cell; they are easily replaced. It is the safest current and most regular in its flow; not subjected to the damaging outside influence that you might have from a current obtained from a power plant, and you escape all accidents that might occur during an electrical storm, accidents to machinery, etc. The reliability, simplicity in operating, safety, neatness and cheapness warrants the use of the cell battery system, in my opinion, as against all other sources of obtaining current. From my knowledge of dentistry and the many advancements made in the past few years, of all I think that of cataphoresis the greatest, and my object in this paper is to acquaint every brother here with the workings of this apparatus, its convenience and the ease in which cataphoresis can be successfully produced. While I may not have enlightened you to any great extent on this subject, I hope that some of these wandering remarks may get you to thinking, investigating and experimenting on this line, and may be the means of an outgrowth that will be a benefit to all.

In cataphoresis—current first, which should be continuous or

direct and under absolute control; perfect insulation, second; tension, third; quantity, fourth; medicines, fifth; a good, careful, watchful operator, sixth, and success is assured.

DISCUSSION.*

DR. MYERS: This subject is something we all wish to investigate. I have been experimenting with cataphoresis for five or six months; previous to that time I had used the direct current, but obtained no results that were satisfactory. With cataphoresis the results are very satisfactory, and I know that we have found something that will prove of great value to the profession.

DR. DUNN: I would like to ask how amperage and voltage are controlled separately?

DR. CARIS: By coils of wire. They are not controlled at the same time, but separately, as there are two distinct controllers for them.

DR. BETHEL: I have been experimenting along the line of root-canal treatment, with nitrate of silver applied cataphorically. We all realize the need of some germicide that will not only destroy bacteria, but leave behind an antiseptic residue that will prevent the subsequent development of micro-organisms.

Everyone knows how nitrate of silver applied to cavities in temporary teeth, or labial and other cavities of the permanent set, will prevent decay so long as the discoloration remains. If in this location it prevents further decay, why is it not an excellent lining for sterilized root canals? Under a root filling it ought to be permanent, and in small or tortuous canals, where it is impossible to fill the roots thoroughly, it is a question if filling is necessary if the canals are thoroughly coated with the silver nitrate, as it alone will prevent subsequent growth of germs. The difficulty in applying the nitrate in the usual manner has been that we could not work it well up into the canals, but by means of cataphoresis it follows the canal and permeates the tubuli to quite a depth. Even small canals, into which it is impossible to get a broach, are surprisingly well lined to the very apex of the root. And in roots with restricted portions or branching canals, it seems to thoroughly permeate, as the specimens I shall pass around will demonstrate.

Protect the cavity in the tooth crown from discoloration, by

* Dr. Ambler also read a paper on this subject, which appeared in the April and May issues OHIO DENTAL JOURNAL.—ED.

the application of melted wax, or cajuput-chloro percha solution, previous to the application of the silver nitrate.

DR. AMBLER: We found, as Dr. Bethel said, that it would penetrate canals that we could not see with the naked eye, or by holding the tooth up to the light and examining by a magnifier we could not discover there was any root canal. The molar specimen shows that very beautifully.

This method of application will do when nothing else would. Sulfuric acid was spoken of in regard to opening a canal. The gentleman who has originated that process makes it a point to pass through the apex of the root. And this has been published in the journals, and has been substantiated by many dentists. They make that a point so as to be sure they perform complete antisepsis. Then in a permanent tooth, is the foramen going to be large enough so that if our nitrate of silver does go through it will do any harm? You can answer that question yourselves. Now, we do not ask you or anyone to use nitrate of silver unless you want to. And I would say the same thing in regard to the application of nitrate of silver for preparing cavities that you are going to fill with amalgam. I am not going to ask you to use it. You can do as you please. The reason we use it is because it forms an insoluble compound.

Now, to show you further in regard to this matter, one of these teeth had a portion of the pulp in it. By applying the process of cataphoresis there you can destroy it as soon as you want to, in less than a minute sometimes. I have applied it to cases where I have just extracted a tooth. We have an opportunity to get these cases at the college, and I have applied it to them. This cataphoresis is applicable to badly congested pulps. The way to treat your pulp is to put on the nitrate of silver, and apply the current and extirpate, then you can fill at once. We know this by experiments. It is something new.

I would never use pure guaiacol on the mucous surface of the mouth, but if you reduce it one-half or two-thirds, it is all right. If you use guaiacol it is necessary to have it pure. A good article is entirely colorless, and it does not have the odor that the poor quality has.

Now another point that I wish to make is in regard to the application of the negative electrode to the hand, back, face, or anywhere else. I think the best plan in applying it to the face, is to keep away from the nerve plexus. Electricity can be used

on any part of the body, though we don't want to stimulate the nerve plexus in front of the ear. I keep away from that. Some operators place it on the neck and others on the wrist, but I think the method that is used by most operators is to place it on the face. Now, when electricity passes through the body, it must go from one electrode to the other; but if you have a small electrode and a large one, and you have a small electrode in the tooth, you will get more in the small than in the large one. Now I argue that you should put your sponge electrode as near the tooth as possible. If you put it in the hand, the argument against that would be, that the tissue of the hand is a good deal harder than that of the face, and if you do put it in the hand, you must have more current than when on the face. So it seems to me that the neck or face is the proper place.

In regard to the resistance of patients to the electric current, I will say just a word; that it is very difficult to tell how much current a person will bear. And when we know that the resistance of the human body varies from 1,000 to 12,000 ohms among different people, we can see readily where the application of our statement comes in. I can bear considerable before I feel it in my tooth. But the next person may not be able to bear a quarter of the same before they get a sensation. Now, what we want for obtunding sensitive dentine is something practical; something that will drive the medicine into the dentine. We do not want anything that is going to burn. We want the driving force. We do not want amperage hardly at all. That is where experimenters have made their mistake, in putting on amperage instead of voltage. As I showed to you in my paper this morning, it took a good deal more force to drive the current through a thick surface than through a thinner surface. One gentleman said, if I understood him correctly, that in applying cataphoresis to the mucous surface, that he uses 20 or 25 % cocain. I have never done that because I did not see the necessity of it, and should fear toxic effects.

The reason I did not get any results from the 25 % solution of etherial pyrozone, when used for bleaching, was from the fact that alcohol, ether, and chloroform, are non-conductors, but I did not know anything about that, so I kept on experimenting and finally I discovered that fact. Then the next thing to do, if you want to use your pyrozone, is to get rid of your ether. The way to do that is to pour out two parts of pyrozone and one part of

distilled water in your dish. Shake them up well and let them stand uncovered for five minutes, then you will have left a 25 % solution of pyrozone. You have something then that will conduct a current. But to make it a little better than that we add a trace of soda sulphate. Then you can do some bleaching. I will tell you how our experiments are made, and I want to stimulate you all to make further experiments. We take a vasaline bottle that is empty. Dampen your sponge electrode in your sodium chlorid solution and set it right into the top of the bottle, having your terminal connected with the electrode. You have your negative electrode right there, and then take the tooth that you want to operate on and wrap it in a piece of wet cotton. Then take your positive electrode and you can apply it wherever you wish, in the root canal or elsewhere. You can cut out a little hole in the cotton or sponge, to force the tooth down into. Then you can do your bleaching there, or make any experiments you wish to out of the mouth.

By the way, if you will put both terminals of your battery into a ball of clay, some distance apart, you will find very soon that the water in the clay is moving from the positive to the negative pole. I am telling you all these little experiments so that you may carry them still further and find out more applications for cataphoresis.

Progressive Calcification.*

BY JUNIUS E. CRAVENS, D.D.S., INDIANAPOLIS.

A PULP that can live without protection should be protected. Pulp that cannot survive without protection were better destroyed. This law was promulgated on the Mount of Olives, nearly two thousand years ago, by one who said: "Unto every one that hath shall be given, and he shall have abundance; but from him that hath not shall be taken away even that which he hath." It is the oldest of laws—*the survival of the fittest*.

The irrepressible activity of the dental pulp as a builder should not be overlooked nor undervalued. The philosophy of

* Read at Mississippi Valley Dental Society, April, 1896.

nature does not require that completed dentine shall be nourished, any more than that enamel shall be similarly favored. When in the process of development, dentine has attained a maximum or extent for practical purposes, *regular* activity of the odontoblasts is at an end—all subsequent activity of these elements is secondary and *spasmodic*, regional, responsive only to special excitation induced by irritation of external source. All secondary activity of odontoblasts results only in secondary deposits which always are irregular and erratic in structure; probably the nearest approach to regularity in these is the fact of lamination, which merely shows eras of activity.

The form of secondary calcification most frequently met with is that known as secondary dentine, discoverable to some extent in canals and pulp chambers of most persons beyond maturity. Secondary dentine may be pretty evenly distributed over the walls of a pulp chamber, or confined to a particular section of the wall, or appear in form of tumors or nodulations—more or less pedunculated—firmly attached to the cavity wall. The benefits and evils of secondary dentine are about evenly conferred and well mixed, *i. e.*, neither is universal and absolute.

As already suggested, development of secondary dentine is due to specific irritation of external relation; consequently the greater formations occur on those parts of the wall of the pulp cavity nearest to or toward the source of irritation.

Activity of odontoblasts in secondary calcification may be manifested over a considerable portion of the surface of a pulp at once—provided the irritation were general—a condition most likely due to extreme temperatures or probable alternation of them. Whilst the odontoblasts are most actively engaged thus, the individual probably feels no discomfort, and the progress of deposition may be so slow as to require many years before producing noticeable effect; on the contrary, very extensive deposits may occur in a year or less time.

Secondary calcification is usually much more rapid than regular dentinification. Secondary dentine often occupies nearly all the pulp chamber, causing a reduction of the pulp until it merely exists in the canal in the root.

In rare instances, nodules of calcific matter are found in the canals; this rarity, probably, is owing to a lowering of vital force in the pulp, thus restricting activity of the odontoblasts.

There is another reason why odontoblasts within the root canals do not oftener resume spasmodic activity. They are not subject to external influences to the same extent as those within the crown of the tooth. Naturally a root is protected and may be said to have no external relations other than physiological.

A pulp canal is subject to two constrictions which may be called apical and coronal or cervicel. The first constriction to be considered here is the coronal, located at the point at which the pulp enters the canal from the chamber; the coronal constriction doubtless is the secondary one. The coronal or secondary constriction is related to practice in an important degree. Every operator has experienced some difficulty in penetrating certain canals, because of a mass of secondary dentine that is found projected over the entrance to the canal, sometimes almost closing it. The removal of this obstruction often reveals a liberal canal beyond.

The coronal constriction is not due to external cause. It is developed in response to a natural demand to meet an emergency. When the dentine of the crown has attained a maximum thickness for practical purposes of a tooth, such as wear-and-tear and strength, the activity of the odontoblasts must be reduced and finally stopped, and this can only be done by lowering the vitality of the pulp itself, enfeebling but not destroying it. An external irritant of a pulp may be the stimulus of enough irritation of that organ to induce renewed activity of the odontoblasts immediately involved, for a time, but here as elsewhere spasmodic effort receives only spasmodic support; the supply of pabulum (building material) fluctuates with the wavering of the inflammation. Inflammation is high living, and if extreme in a pulp, nutrition fails.

The coronal constriction may be developed so rapidly and extensively as to literally strangle the coronal portion of the pulp, and the dentist discovers a case that has died and given no sign.

But there are other secondary deposits to be observed before reaching the terminus of the canal; pulp nodules are oval or rounded bodies, frequently found in the substance of pulps, and having no connection whatever with the cavity wall or any other masses of secondary matter. Doubtless the same character of irritation that causes development of secondary dentine also

stimulates formation of independent nodules, but in the latter the odontoblasts have no part, unless possibly one becoming separated from its associate bodies sinks into the substance of the pulp and becomes a nucleus around which accretion of lime salts occurs, from the superabundance drawn to the pulp by the mild irritation, and which the coronal constriction prevents being promptly returned to the general circulation. The process of nodulation within pulp tissue is analogous to that by which oysters and other bivalves construct pearls.

Nodules within pulp canals are much more rare than those in the coronal portion, nevertheless, the writer has discovered several cases, one in particular, in which there were three small oval nodules in the same canal. The study of these nodular formations is certainly very interesting, and may be made profitable at least to the mind of he who studies them. Some specimens, when cut, show beautiful laminations, that mark periods of activity and repose in the process of secondary calcific deposition.

Going back to the pulp chamber, from which we wandered in the search for pearls, let us penetrate the tubuli of dentine for further discoveries of secondary lime deposits. Under stress of certain conditions the pulp fails to invest against encroachment by deposits within its cavity, but instead, the embryoplastic filaments within the tubules that may be affected by an irritant, permit or accomplish transmission of fluid to the peripheral loopings of the tubuli, the transmitted fluid containing the salts of lime in solution; the embryoplastic filaments possessing the power of osmosis. The salts are laid down in the tubules at their terminals first, solidifying them, as close to the irritant as possible; by gradually increasing inward this process results in a final solidification of a section of dentine that thenceforth is insensible, thus protecting the pulp from external irritation; this character of deposit is classed as obstructive calcification, and is in nearly every essential different from all other calcific deposits or formations in teeth. This obstructive action may be confined to a group of tubules that directly are affected by thermal irritation from a metallic filling, the visible evidences of this special deposit being demonstrated by a section of dentine lying between the cavity of decay and the pulp chamber; the differentiation of color and marked opacity of the solidified tract is easily notable without aid of magnifying apparatus.

Obstructive calcification often is general in a tooth, from some general irritation, and in senile abrasion is nearly always to be observed. thus we are enabled to account for the low sensibility of dentine of most of our aged patients, and their non-amenability to ordinary tooth-ache. A slow abrasion of any character will stimulate obstructive calcification. In all these obstructive measures nature acts solely on the defensive against outside influences, pulp nodules alone being erratic calcification.

There is no pulp dynamics capable of nourishing dentine that has become solidified by obstructive calcification; collateral saturation is insufficient.

Once more penetrating the root canal, we discover another interesting differentiation in secondary calcification, known to practitioners as canal casts. From their appearance these differ considerably from other secondary formations and deposits named, although of the same constituency. The casts are formed within the canals, in apparently the same manner as the nodules, but are long, rod-like and conform closely to the form of the canals in which they appear; this close conformation to the canals has given these deposits the name of *canal casts*. Some canal casts are quite solid, while others appear to be formed of fine crystals like asbestos; while mechanical adaptation sometimes enables a cast to hold tolerably well to the canal wall, they never are really attached. As in cases of pulp nodules, the canal casts are independent and erratic formations, in which the odontoblasts have no interest.

It is supposed that the spongy casts are so because of rapid atrophy of the pulp in the canal, and lowering or expiring vitality in it, probably accomplished by cemental constriction of the apical end of the canal.

It is well known, or ought to be, that the apex of a tooth-root is always completed by cementum, if completed at all; and in this cementum, always growing, we have a continuance of the process that I have called progressive calcification, that began with the appearance of stellate bodies in the enamel organ, and does not end, except in death of the pulp or extraction of the tooth. Even after death of a pulp, progressive development of cementum does not lose significance in its discontinuance, because as abrasion reduces articular value of a tooth, the additional laminations of cementum should be sufficient to maintain articu-

lation, and usually will so long as the pulp remains alive; then we can understand that if there eventuate a failure of cemental development, it may become conspicuous in that failure alone.

The histories of the dental pulp and progressive calcification are written in the same page of events, and must be read together, and reading them thus brings us to the following conclusions:

First. Time enough being given, the dental pulp inevitably must destroy itself or be obliterated by influence of progressive calcification.

Second. From the stage of practical completion of a tooth, the pulp labors toward self-destruction, to suicide by secondary deposition.

Third. After practical completion (articulation) of a tooth, its tenure does not depend upon continued vitality of the pulp.

Fourth. While unnecessary destruction of pulps should be discouraged, it is better to attain certainty of good results with pulpless canals, than to wrestle with disappointing after-effects of attempted conservation of live pulps, therefore I have declared the following:

Fifth. A pulp that can live without protection, should be protected; pulps that cannot survive without protection were better destroyed.

The X Rays in Dentistry.*

[A WHIMSEY.]

BY FRANK W. SAGE, D.D.S., CINCINNATI, O.

IN November of last year, in the town of Würzburg, Germany, was made a discovery which seems destined to confer upon the science of surgery a power of benefiting the race in even a greater degree than has the comparatively recent discovery of Lister.

It is a fact significant, and worthy of note, that the first suggestions as to the value of this important discovery, had reference to its availability in surgery. Aside from casual suggestions as to the use of the rays in the arts—their application to the

* Abstract of paper read before the Mississippi Valley Dental Society, April, 1896.

testing of castings, welded metals, *et id genus omne*—attention seems by common consent to have turned to their use as an invaluable adjunct to surgery. This is natural and befitting, since the addition to our knowledge of so invaluable an aid to the prevention or alleviation of human suffering, must be conceded to outweigh any consideration of possible advantage which might accrue to the sciences and arts on the side of mere utility and convenience. Far more important is the consideration that the surgeon may be aided in a manner hitherto beyond the dream of possibility, in examining tumors, all affected tissues of internal organs, *e. g.*, malformations, fractures, abscesses, impacted or encysted foreign bodies, etc. Far more important is this than that the artisan should be enabled to detect hidden flaws in metals, or that the photographer should find at his command a new experiment to excite the dilettante's curiosity by a feat of magic surpassing the most wonderful of any school of mystics.

But in all the many lucubrations on the nature and the possible availability of the mysterious X rays, not a word has the author of this screed seen, in any publication, magazine or newspaper, touching the benefit likely to accrue to the dentist or the dental patient. The dental journals of recent date contain one or two articles on the great discovery, but singularly enough not a hint of promised value to our profession is to be found in them. And yet the merest casual reflection, it would seem, should have suggested the probability that this discovery is destined to work a revolution in the matter of diagnosis alone, infinitely more important than any late discovery in pathology, histology, or therapeutics. Now that Mr. Edison promises us shortly a perfected instrument for revealing—not by photography, but by the immediate and direct application of the X rays to the patient's hand, foot, or jaw—a clear view of hidden lesions, what a clearing away of the cobwebs of mystery shall we witness! What a relegating to the garret of volumes on diagnosis; what an overhauling of theories and speculations on etiology and prognosis! What a change in forthcoming literature on all branches of scientific dental research! Nor is this mere idle speculation. From various quarters come tidings of successful experiments forestalling Mr. Edison in the line of his special inquiry, so that it seems not extravagant to expect before long, a simple electrical appliance to be attached to the dentist's outfit, far more indispen-

sable than the electric motor, the electric month lamp, the cautery, the mallet, or the baking furnace.

How shall we restrain our impatience to get to work with the new appliance? Behold the pyorrhea alveolaris enthusiast dropping his pen, heedless of splashing ink, and sending post-haste for the patient, whom he has burnt oftenest with zinc chloridum, argentum nitras, acid sulph., and with nervous haste turning on the X rays to note the exact extent of the reparative process, or locating calcic nodules, pus pockets, galleries, etc. Fancy him reaching after a calcic spicula at the very apex of a root, applying the delicate scaler to the exact spot, undisturbed by any accidental flow of blood or pus, through which the rays continue to shed their light, as before. Behold him locating the bit of protruding wire or broken-off broach, in a root, noting the curve of roots requiring extraction, observing the deposition of granular matter in the abscess from which he has withdrawn his tampon, locating sequestra, detecting exostoses, pulp nodules, necroses, antral engorgements, odontomes. With what facility will he fit crowns to roots, peer into approximal spaces for suspected cavities, examine cervical borders of fillings. Away with carbon paper, sheet wax and such clumsy aids in securing proper fits of crowns to roots, of crowns to crowns. Farewell to the recording ledger. What need of noting on paper that this root was filled with gold, that one with tin, the other with chloro-percha; the X rays will tell us all about it, nay, more invaluable even than this will be their service—they will tell us what the patient's former dentist, on the next street. in the next town, in the unknown beyond, has done.

In the October, 1886, number of the *Cincinnati Medical and Dental Journal*, the writer of this paper published a whimsical article foreshowing the probable status of dentistry at the end of the 20th century. An agent is represented as calling upon a dentist offering for sale various patented appliances, one of which he describes in the language here quoted:

"Doctor, this little instrument is called the 'Pocket-book and Bank Account Detective.' Attached to your chair, it records on this little dial, in characters intelligible to yourself alone, the exact amount of cash in your patient's pocket. By the use of this simple device, you are enabled to preserve a conscience void of offense, since your fee need never exceed the patient's ability to pay," etc., etc.

Little did the writer suspect when he wrote the above, the announcement, which would in less than ten years be made, that the contents of a purse, concealed in a pocket, could be distinctly photographed.

We can conceive of the consternation of one tempted to suggest the value of the X rays to dentists, when he pictures himself seated in the operator's chair, his thoughts concentrated on that "buzzing machine," or that inquisitorial clamp, while the dentist's assistant stealthily turns the X rays on his artfully concealed purse, in order to supply data upon which the busy operator may later on assign a fee for the service commensurate with the victim's means. But then on the other hand, we can conceive of the patient himself armed with a Kodak X Ray apparatus, stealthily peering into the operator's brain with a view to penetrating the centres of thought, exposing naked to view the unrighteous purpose of charging ten dollars for a four dollar filling.

But from the standpoint of mutual advantage to dentist and patient, what a glorious future is about to open to the profession. The practical use of the X rays is destined to overcome the patient's reluctance to submit to the dentist's assistant in the matter of diagnosing obscure lesions, since he must perceive that the merest tyro, employing the X rays, has an advantage over most experienced diagnostician, in ferreting out the cause of trouble.

"Doctor, I have wandering pains about my face and jaw, can't say whether it is neuralgia or toothache," says the suffering patient, coming in upon the busy operator.

"Ah, that's not very pleasant," says the operator over his shoulder, without looking round. "John, turn the X rays upon Mrs. Brown's jaw, and report to me what you discover." In a few minutes John reports; "Upper third of left lower second molar pulp decomposed under filling. No periostitis as yet."

"Ah, very good, you may treat the case, John."

Which John accordingly does, to Mrs. Brown's perfect satisfaction. No waste of time whatever. The operator goes tranquilly on with his case in hand, leaving Mrs. Brown in John's charge, thinking of the former days when he was interrupted every fifteen minutes during the day by some Mrs. Brown, who wouldn't trust John on any account, and who kept him ten

minutes testing the suspected tooth with ice-water, hot gutta-percha, percussion, etc., no one in the end being any the wiser. Here comes Mrs. Jackson, complaining that her new store teeth are a misfit. Turn on the rays, hand Mrs. Jackson a mirror, and let her point out if she can, any point at which the plate fails of being in close conjunction with the underlying tissues. Equally applicable are the X rays in detecting faults of articulation.

Welcome the dawn of the glorious day when the new agent, by revealing the perfection of the dentist's work, shall force upon the consciousness of the complainant, that an unpaid bill is the only real lingering element of dissatisfaction.

Thus hastily and crudely have we sketched a few of the benefits which the X rays may confer upon our profession. And who shall say that a literal fulfillment is beyond reasonable expectation?

ALL SORTS.

A Powerful Hemostatic.

Since last year I have been using a mixture of antipyrin and salol for checking all kinds of hemorrhage in dental surgery. At present I rely upon this remedy with much confidence. It seems to me that the said mixture possesses a styptic power superior to any one of the substances generally used for that purpose.

To prepare the mixture, I put into a test-tube equal parts of antipyrin and salol. Then fuse the contents of the tube over a spirit lamp until the clear liquid immediately resulting after the application of heat has turned to a hazel color. If prepared in this way the mixture will remain longer in a liquid state. Antipyrin alone is a powerful hemostatic, but becomes solid so quickly after you lift it up in a pellet of cotton that it cannot practically be used in dentistry.

During the last few months I have had occasion to appreciate the value of antipyrin and salol in artificial crown- and bridge- work. Contrary to all other astringents, the mixture of these substances rather dissolves than coagulates the blood, but checks the flow. Applied to the wounded gum, it leaves a clean, dry, raw surface.

I have not found anything better for hemorrhage after extraction.—
A. E. MASCORT, in *Dental Cosmos*.

Electrical Osmosis.

The following is from an editorial appearing in the June *International Dental Journal*:

"This new form of treating sensitive dentine is justly claiming a large share of attention. The earlier efforts in this direction and the conclusions reached have been confirmed by subsequent experiments.

"In an interesting clinic given to a few deeply-interested observers, by Dr. Jack, we were impressed by two facts—first, the possibility of carrying the agent used—in this case cocain—through apparently dense dentine. The case operated upon was that of an inferior bicuspid, abraded to an even surface, but exquisitely sensitive, so much so that the touch of the finger produced a painful shock. The current was turned on carrying a twelve-per-cent. solution of cocain, and in a short time all sensation disappeared. The excavator demonstrated, however, that this obtunding was superficial, and a second application was rendered necessary, but with entire success.

"The point of interest here, outside of the loss of sensation, was the fact that an abraded tooth means an almost certain increased calcification of the tubuli and a supposed increased resistance or, in any event, a greater obstacle to osmotic action, but in this instance the result was entirely satisfactory and quickly produced.

"The second case was a large superficial cavity on the buccal surface of an inferior molar. This required twenty minutes, but a perfect obtunding was the result. The singular fact was developed that these teeth, insensible to the excavator, quickly responded to thermal change by the use of cold water.

"The time has not yet arrived when the question can be answered, what effect will this treatment have on the pulp? The danger, if danger exists, will be in that direction. Theoretically the paralyzing effect of the cocain should, in some cases, result in an eventual devitalization of the pulp. As the action seems to be superficial, this could only occur in cavities with a thin layer of dentine over the central organ.

"The experience that some have had in the production of great pain, seems to have been the result of inadequate instruments or methods of manipulation, for with the apparatus described by Dr. Jack it would seem impossible that, with ordinary care, this could occur.

"Another complaint made is the time taken out of an operator's hour, from twelve to twenty minutes. This is, apparently, a serious objection, and yet it is only apparent, for the time lost struggling with a nervous patient, to say nothing of the unending strain upon the dentist, more than counterbalances the delay, for the time lost is fully made up by subsequent rapidity of execution.

"There is another difficulty yet to be considered, and it is by no means a slight one, the danger of filling over an exposed and temporarily obtunded pulp. This in careless hands will certainly be of frequent occurrence. Notwithstanding the many doubts surrounding this new method, the outcome will be awaited with increasing interest."

Laboratory Scraps.

"Every dentist should know how to the best advantage to dispose of his scraps and filings of the precious metals. It is not very good economy to pay a dollar or more for gold or platinum, and then to sell the clippings and filings back to the same man of whom they were originally procured for thirty or forty cents. The necessary apparatus for refining and melting gold does not cost much, and every dentist should know the process. Old scrap that is not fit for rolling out into plate will make solder. Refuse foil may be melted, and it makes excellent fine plate for many purposes. Even old amalgam fillings may be melted down and filed up again, the mercury being all sublimated in the crucible.

Platinum scrap has heretofore been considered unavailable for working over. But with the electric current it may readily be reduced. Any one who has the Custer Electrical Continuous Gum Furnace, will find no difficulty in working up platinum refuse. We lately sent to Dr. Custer a considerable quantity of scraps of various grades. First there was a lot of trimmings of pure metal, obtained from platinum bases for continuous gum plates. This was returned in buttons of pure platinum, which were readily rolled out to any desired thickness. Then there were platinum filings and trimmings, containing a little pure gold used as a solder. There were platinum devices of various kinds, that had been used for retaining or other kindred purposes, and platinum scraps of many kinds that contained gold as a solder. This when melted was rolled out and used for the manufacture of crowns, and for almost any device, save the making of continuous gum plates. It is quite as good for most purposes as if it were pure platinum.

Finally, there was a lot of gold scraps containing platinum—old crowns and different appliances in which a small amount of platinum existed. These were rolled out into plate, and it makes excellent clasps, may be used for backings, and for the construction of devices that require great rigidity and strength, with but little material. Altogether, there were a goodly number of pennyweights of metal of the widest possible application in dentistry, and which, if sold, would have brought but

a contemptible sum, but which now serve to fit out the laboratory with a choice selection of useful metals."—*Editorial Dental Practitioner and Advertiser*.

The Contour Filling.

In a paper read before the First District Dental Society, and published in the *Cosmos*, Dr. G. S. Allan says:

"First, in reference to the mechanical adaptation of the filling-material to tooth-structure, and

Second, to the chemical preparation of the cavity.

When the decay has greatly weakened the walls of the cavity, the point first to keep in mind is that the power of resistance of the walls is limited and doubtful; whereas the amount of pressure or force to produce thorough compression of the gold and adaptation, in case gold is employed, remains the same. It is all-important, therefore, to be cautious and have good judgment. Here it is that the properties of the so-called soft gold comes into play. The force that will thoroughly pack a pellet or soft gold of a given size and weight, is wholly inadequate to perform the same duty with a similar pellet of hard gold; therefore it is wise in almost all cases to select the soft gold for the bulk of the filling, where the danger from imperfect adaptation is greatest. As the soft gold packs easier, so also does it spread away from the point of the instrument, and the compression becomes difficult, owing to the gold leaving the cavity on the unprotected side. To obviate this difficulty the matrix has been called into service, and most beautifully does it meet the want. I cannot too strongly call your attention to its value. It is with the Jack matrix I am most familiar, and it is capable of a wide range of usefulness. A large class of cases though, and those where its want is most felt, seem to be beyond its reach. It requires, of course, the presence of a neighboring tooth to wedge against, and this is not always present, or if present, may be in a bad condition. But when it is not present, the necessity of a contour filling is not great.

A greater trouble arises when the shape of the crown has been changed by decay to the extent that when the matrix is applied it does not stand away from the tooth sufficiently at the grinding surface to allow of restoring the shape. Just here it is that extra skill is required in placing the wedges that hold it in place; by oxyphosphate properly prepared can quickly be made to fill the gap, not always but very frequently, and even red gutta-percha will answer. If the oxyphosphate, when it is mixed, has a little carmine added to color it, one can be very certain that none will remain in the cavity to work harm in the end. By making the

mixture very hard and stiff in the beginning, it sets so quickly that but little, if any, time is lost. The wedges can then be forced into place, and the matrix will stand away from the tooth as required, so as to restore the shape. Gold and tin pellets even answer a good purpose, and take even less force to properly compress. The very worst thing that can be done is to rely on hard or cohesive gold only. Of late years amalgam has come into play, and experience proves that it has many and exceptionally good qualities. Gold and amalgam make a good combination, and amalgam will strengthen weak walls in a way that nothing else will, and in addition it can be lapped over the point of danger of pulp nearness and thoroughly protect it. None of the good qualities of either material are lost in the bond of union, rather they appear mutually to assist each other.

Let me close with a word on the chemical preparation of a cavity. Knowing as we do now the true cause of dental caries, it is not difficult to answer the question, "What is to be done?" but the other question which instantly comes to the front, "How are we to do it?" is quite another affair. As tooth caries is a sequence of germ life, the plain answer to the first question is: Remove the cause and so prepare the tooth that it cannot again become active. Bring the tooth to an aseptic condition and maintain it so. Accomplish this much and dental caries is at once arrested, not again to appear. Is this possible? Maybe I hazard too much when I say that my conviction is that it is one of the probabilities of the near future. It will help us much, in considering the problem, to remember what has already been done. It is not an uncommon matter to find cases, where from natural causes, caries have been completely arrested, and the wise man in such cases leaves well enough alone. Oftentimes these cases seem to be very local in their nature, one or more teeth in a mouth being so fortunate, while their neighbors are slowly but surely disintegrating. Why is this? Has any one ever attempted to solve the riddle? And yet it most certainly is capable of solution. When it is solved, suffering humanity will bless the man who brings them relief. Science has done something, as those who have experimented with salts of silver and copper can attest. Copper amalgam has now and then helped me greatly, and so has nitrate of silver. The copper amalgam I have only allowed to remain long enough in a cavity to gain its toxic effect. Some of the salts of copper I have experimented with too recently to say anything about as to permanent results, and yet they seem to promise well.

As suggestions only are these thoughts given you. You must take them for their apparent worth.

A Method of Fitting Anterior Gold Crowns.

Dr. C. C. Allen, in the *Western Dental Journal* says:

"It is sometimes found necessary, notwithstanding the assertions to the contrary, to make a gold crown for one of the six anterior teeth, upper or lower, and when such necessity arises it is important that such crown should fit the stump. A good way and an easy way to accomplish that desired object with the Hollingsworth system is as follows:

After having prepared the root to be crowned, select such a counter-die from the Hollingsworth set as seems best to answer the requirements as to size and shape, etc., and, without reference to the size of the cervical end of the counter-die selected or the root to be crowned, proceed to make a die of fusible metal in the usual way. After having secured your die of fusible metal, swedge up the two sides out of 39 gauge 22 k. gold and trim and file until they lay flatly together. When placed together the cervical end of the crown will be found in all likelihood too small. This is as it should be. Now take the two pieces and bind them together with binding wire in such a manner that their cutting edges only meet. This can easily be done by passing the wire between the two halves at the base of the tooth. When you have them in this position, place a *very small* piece of solder on the inside and hold in the flame and the point of the crown. This will give you a gold crown with a slender V-shaped opening on each side. Festoon this crown until it follows the gum line all around the tooth, then bend the two halves of the gold in or out as the case may require, until they fit the root closely. When you have adjusted the crown to the root to your satisfaction, remove and place a thin piece of pure gold over each of the two V spaces, rub these down gently with your finger, bind lightly with wire and solder.

Finish in the usual manner and you will have a gold anterior crown which is as presentable as any gold anterior crown can be, and one which will fit."

Carbolized Resin as a Pulp Capping.

In an article on the treatment of deciduous teeth, in *British Journal*, J. H. Jones says:

"Notwithstanding the greatest amount of care exercised, the pulp sometimes gets exposed whilst excavating; in that case, as soon as possible, I apply carbolized resin to the exposure and then place of chloro-percha, sufficiently thick to drop from the end of an instrument, upon the spot, over which I again put a layer of gutta-percha, very thin. On this, I am able to build up an amalgam or white filling."

Practical Utility of Accurate Studies of the Physical Properties of the Teeth and of Filling Materials.

DR. G. V. BLACK recently read a paper on this subject, before the N. Y. Odontological Society, which appears in the *Cosmos*. Regarding *soft teeth* he says :

"It has become a habit of so many dentists that it may almost be regarded as the habit of the profession to regard teeth that are seen to be decaying rapidly as *soft teeth* ; teeth that are poorly calcified : teeth that will inevitably be lost on account of their poor quality as teeth ; and to plainly tell patients that their teeth are poor in quality. This is demonstrated to be an error as plainly as any demonstration can make it. Teeth that are rapidly decaying are as apt to be well calcified, strong, and dense, as teeth in which no decay appears. It is emphatically not the difference in the calcification of the teeth, the amount of lime-salts they contain, that constitutes the basis of the difference in their susceptibility to caries. Difference in treatment, based upon this supposition, lead to misfortune. It leads the dentist to cease his efforts in the use of what he may consider the best of filling-material, and substitute something that is easier, in exactly the case that demands his highest skill. It leads patients to the notion that efforts to preserve their teeth will be futile, and begets negligence. From what we now know, such a course is wrong, and the dentist in pursuing it is wronging his patient, himself, and his community. The facts are that rapidly decaying teeth are sufficiently hard for any kind of filling-operations, even those that may be poorest in lime-salts. The contention is not that the teeth are equally hard and dense, as will sufficiently appear later, but that these differences bear no relation to their diseases. We know that the active cause of caries does not exist within the tooth, but is from without, acting primarily upon its surface, and does not appertain to differences in its structure. Differences in susceptibility are, in all reasonable probability, from without also, and are conditions that are well known to be variable or changeable. It is certain that many cases of the condition of rapidly decaying teeth, when occurring in young persons, disappear with increasing age if the proper efforts are made to limit the damage done. I know of no greater evil existing in the dental profession than that of looking upon such cases as soft or poorly calcified teeth, and it becomes doubly so when such ideas are communicated to the patient.

In this connection, I wish it distinctly understood that I recognize such faults of form as give opportunity for lodgment of food debris favoring decomposition in intimate contact with the tissues of the teeth, as conditions favorable to the beginning of caries. Any fissures, or imper-

fect closure of the lines of junction of the enamel plates, pitting of surfaces, bad forms of the interproximate spaces, etc., give opportunity for caries. Interglobular spaces occurring in the dentine, or other forms of abnormal openings in their tissues which form rapid ingress of micro-organisms, serve to increase the rapidity of caries. These classes of faults of form and structure have been revealed by macroscopic and microscopic examination long ago, and my recent investigations have no relation to them whatever.

Since the publication of my papers, I have been so frequently asked about *differences in the hardness of the teeth to cutting instruments* that I wish to say emphatically that there was no intention of saying anything whatever on that point in what I have written. Whenever hardness or softness of the teeth is mentioned, it has been with reference to the prevailing expression of hardness or softness as expressing the idea of more or less perfect calcification, or with reference to the ability of the dentine to withstand heavy pressure without crushing. It has not had reference to the behavior of the teeth before cutting-instruments. I did try to investigate that point, and tried a number of plans. None of them gave results that were satisfactory, or that I thought valuable. I will say here, however, that experimentally out of the mouth I was unable to find any marked difference between teeth classed as soft and teeth classed as hard, and the impression upon my mind is that much of the difference in the hardness of the teeth as found in operating in the mouth is a matter of position, direction of cutting, and opportunity. Still, however, I am finding in practice that which appears to be very considerable differences in the hardness of teeth to cutting-instruments. I am persuaded that in many cases men have mistaken for normal dentine dentine softened by partial solution of the lime-salts.

The strength of the teeth under stress is something very different from their hardness before cutting-instruments, and probably not at all correlated. The variations in the strength of the teeth have been shown in the May issue of the *Cosmos*, 1895. The difference found amounts to thirty-five per cent., excluding pulpless teeth, or forty-one per cent., including pulpless teeth. When we consider the narrow range of variation of lime-salts, this difference in strength seems very wide, but is found not to be entirely dependent upon the percentage of lime-salts.

The weakest dentine found, living when the tooth was removed, bore a stress of one hundred and ninety-five pounds on a block .085 x .085 x .085 of an inch, which equals two hundred and seventy pounds on a block one-tenth of an inch square, the size of the experimental gold fillings you have made for examination. The strongest of these fillings was shortened two per cent. by a stress of two hundred and fifty pounds.

In other words, that hardest of your gold fillings can be crushed out of all semblance of its original form upon a block of dentine from the weakest human tooth, without injury to the dentine. This is enough to say about teeth "too soft for gold fillings." The quicker that idea is out of the heads of dentists, and the laity as well, the better."

Regarding the making of fillings he says :

"I have made a good many experimental fillings, recording carefully the steps in each operation, and from these I am able to deduce some general propositions.

To make a very dense filling *does not* require very heavy malleting, but does require that the gold be used in thin pieces, carefully and evenly laid, and that the malleting be complete over the surface of each piece ; such a filling will not be very hard.

To make a hard rigid filling *does require* heavy malleting in addition to care in laying of the gold, if the filling is to show great density as well as rigidity.

It occurs, therefore, that a very dense filling, one of high specific gravity even of cohesive gold, may be soft, and will yield readily to stress, and is so if the malleting has been light ; while on the other hand, a filling that has been made very rigid by heavy malleting may be of less density because of less care in the placing of the gold, or from using the gold in pieces that are too large, causing many air-spaces that are to be bridged over. Again, heavy malleting with a small point may cause the instrument to pit the condensed gold deeply, and many of these pits will be bridged over, which will reduce its specific gravity. Cast gold, if the ingot has been well formed, cannot be greatly increased in density by hammering, but its rigidity is greatly increased. Anneal it, and the increased rigidity is gone at once without materially changing the density. The hammer will restore the rigidity. By the use of our mallet and plugger points, malleting the gold into the cavity bit by bit, we are enabled to make pure gold more rigid than it can be made from the ingot upon the anvil with the hand hammer.

To make a very dense filling, the plugger-point should be proportioned to the force of blow employed. It is difficult to express this proposition, for the reason that no means has been developed of measuring the force of blow. Even the mechanical mallets are too variable, one with another, to serve as a safe guide. With the blow I habitually use in operating, I find I can obtain the densest filling with a plugger-point about two one-hundredths of an inch square,—*i. e.*, an area of four one-hundredths of an inch. A smaller point pits into the gold too much, so that these pits bridge over. With larger points the condensation diminishes with the increase in size, unless the force of the blow be increased

in proportion. If in any case the malleting must be reduced in force, the size of the point must be reduced, if the density is to be kept up to the point.

In order to utilize the density and rigidity of filling material to the best advantage, certain rules as to the preparation of cavities must be observed. We cannot make a cone, set it on its small end, and apply stress to the larger end, and expect the small end to support the stress that would be borne if the form was of one size from one end to the other. It will inevitably be condensed at its smaller end. We can no more support occluso-proximate fillings that present broad surfaces to the occlusion upon a narrow shelf for a seat at the gingival wall, than we can make the cone support heavy stress upon its little end. If we would have our occluso-proximal fillings stand, we must broaden the seat of the filling which must support the structure, to such an extent that it may bear the load that will be brought upon it. To do this an additional seat must be cut in the central part of the crown of the tooth. Strict experiment as to the strength of gold shows this too plainly for any mistake to be made, and when it is generally done, and the gingival walls made flat and broad and the interproximate space of proper shape, the difficulty of making proximate fillings stand will mostly be a thing of the past.

It isn't anchorage that needs such close watching, but something upon which the filling may rest with broad enough base so that it may not be condensed upon its seat. When this is done, but little further anchorage is required."

To Repair Broken Rubber Plates.

Dr. C. H. West gives the following method in the *Dental Digest*: "If it be a lower plate, fill a lower impression cup with softened modeling compound, and after placing the broken parts perfectly together, carefully embed the teeth downwards in it. With a large engine bur now cut out the crack from the inside, or maxillary side of the plate, to the teeth, and nearly to the lingual and labial surfaces. Then with a hot spatula spread new rubber over the fresh surfaces, which will adhere to them, and the space can be thoroughly packed a little more than even with the surrounding surfaces. Now carefully run model in the plate and over the freshly packed rubber, separate the compound from teeth, bur out, pack the lingual and labial surfaces the same way, and it is all ready to flask and vulcanize, without having to open, and all of the break has been burred out and filled with fresh rubber. After vulcanizing, the surplus rubber in the maxillary groove can be cut out even with the surrounding surfaces.

Upper plates are treated on the same principle—burring out, packing the maxillary and labial surfaces before running the model, after which bur the lingual surfaces to a feather edge posteriorly from the teeth, pack rubber with a hot spatula, flask and vulcanize. This plan saves opening flasks, washing out wax, etc., and the expansion of the soft rubber during the process of vulcanizing fills every open space and makes a very satisfactory job with a very little trouble.

To replace a broken tooth or a block of teeth, cut out from the lingual surface with a file or large bur, under where the broken piece was, until the pins of the new tooth or block do not strike the plate. Fit the new piece to place, wax it up, and flask and vulcanize as above described.

Fitting Flat or Half Teeth.

Dr. H. Rose, gives his method, in the *British Journal*, as follows :

“When flat teeth are to be used, it is as well to nearly fit them, before backing, that is fastening to the backs of the teeth, by means of the pins, a piece of plate corresponding to the shape of the back of the tooth, as a means by which it can be soldered to the base plate.

Until the student gains experience in fitting these teeth he may use a little red paint on his model, but the skilled workman rarely has recourse to this aid. The small size of the base or neck of the tooth, enables him to see where it is resting so that it can be accurately fitted, and when the back is adjusted to the tooth, he can then finish the remainder of the fitting with the bite in position ; this affords great assistance in regulating the exact position of the tooth as regards projection, etc.

Great care should be observed in fitting these teeth that a sufficient amount of tooth substance is left around the pins for strength, and if it is necessary to fit a tooth very short it should be reduced at the point as well as the base, in order to bring about this result. Where a tooth has to be reduced in width to fit into a narrow space, one should be selected with the pins sufficiently close together, or better still with the pins one above the other.

The method of backing a tooth is to take a strip of gold, (No. 8 gauge) of the same width as the length of the tooth, this is held on the bench-pin with the left hand while the tooth to be backed is held in the right. The pins of the teeth are now rubbed on one end of the gold strip, this will make two parallel lines, if another line is drawn across these two, corresponding to the distance of the pins from the neck of the tooth it will give us the exact spot where the holes have to be punched or drilled. When the holes are made, the pins should slip easily through

them, until the plate rests against the back of the tooth. A line can now be marked with a sharp pointed broach around the margin of the tooth on the plate, and then the tooth is to be removed and the plate cut and filed to the required shape. If the pins fit tightly into the holes in the metal back, the tooth is very liable to be cracked in soldering.

The holes should also be enlarged a little externally with a chamfering tool, so as to admit of a head being made on the pins by rivetting; it at the same time permits the solder to flush better around the head of the pins. If the teeth are to be riveted, it may be done safely in the following manner:

After trimming up the back to the proper shape, place it in position on the tooth, then cut off the pins leaving only about the 32nd of an inch projecting through the back metal, see that the back lies perfectly true and steady on the tooth, then paint a spot of borax on the inside of the back to encourage the solder to flow through. We next place the tooth with the back in position upon a piece of hard wax made just sufficiently soft that the front of the tooth can be pressed into it, the wax may rest upon a piece of lead. The wax forms therefore a good support for the whole of the tooth. Now with a rivetting hammer we give the pins a few light blows, so as to form a head to the pins, but not sufficient to draw the back too tightly on to the tooth. Should this be done, we may have, when the teeth are soldered, an expansion taking place in the gold forming the back, and the tooth cracking in consequence.

Another way of fastening the back to the tooth is to place the back in position, then with a fine file reduce the external aspect of the pins until flat; next bend the pins to the right and left flat against the back. If this is done neatly, it answers admirably, and is strong, but it does not do so well if the pins are left round. There is also less danger of breaking the teeth.

Flat teeth when fitted, should have their backs in intimate contact with the gold base-plate, in order to ensure neat soldering.

The teeth when fitted should be fastened to the plate with hard wax the whole is then removed from the model and sunk into an investment of brickdust and plaster.

When hard, the case is warmed up until the wax attaching the teeth to the plate, is softened, it is then removed, and the investment trimmed up; borax is next painted on the plate and backs of teeth, and sufficient solder used to make a good joint.

The case should now be heated over a Bunsen burner and made nearly red-hot, then soldered, and allowed to cool gradually, by placing it in a fireclay pot or other convenient vessel. When cold the investment may be removed and the case placed in H. Cl. to clean it. After

this is filed up and all scratches removed either with file or sculptor, and a surface obtained by rubbing it with water-of-Ayr stone. This latter prepares it for the operation of polishing, which is done by rubbing the case at the lathe with a stiff circular brush using with it finely ground pumice stone, mixed with either water or oil.

As pumice and oil cuts quicker than pumice and water, care must be observed in polishing so as not to rub the plate all one way, or it may be made thin in places.

To polish concavities in the plate, where the lathe brush cannot be made to penetrate, it will be necessary to use a pointed piece of soft wood, charged with pumice, and afterwards with whitening.

After rubbing with pumice, the case should be washed with soap and water, and then polished with whitening or rouge, using a softer brush; it is again washed with soap in hot water and dried with a nice soft rag."

Amalgam and its Manipulation.

In an article in the *Dental Digest*, Dr. J. N. Crouse states:

"Aside from the imperfections of manufacture of the ingredients of amalgam, and the methods of compounding them, there is another barrier to its success, which I am inclined to think is not appreciated, and that is, the difficulty of packing it in a perfect manner in the cavity.

I am inclined to think that pressure used on one portion of a large amalgam filling, while packing it, should be very light, as heavy pressure on one part springs or bends the amalgam away from another part where it may pass unobserved. If this theory is correct, the filling will surely be disturbed many times by the occluding tooth striking it before it has hardened.

The removal of the rubber-dam, unless extreme care is exercised, will cause a shifting of some portions of the mass, owing to the tendency of amalgam to bend or spring, and thus unsuspectedly make defective edges.

The chances are, that the use of a matrix would be more beneficial for this material than for any other, and it should not be removed until the amalgam is hard.

I do not claim that I have solved the problem by any means, but simply throw out a few hints for confirmation or disapproval by the experiments of others. Feeling sure that we have more nearly solved the problem of the manufacture than of the manipulation of amalgam, I have written this article more with a view of getting the co-operation and

assistance of logical practitioners, who will prove each step, than of attempting to throw much light on this difficult question."

Arrangement of Artificial Teeth.

From an article by Dr. A. O. Hunt, read before the Iowa State Dental Society and published in the *Dental Review* we abstract the following:

"We will now consider some characteristics which if well understood will correct the formality with which artificial teeth are usually arranged.

Each natural tooth has upon its labial or buccal surface, a contour outline that is typical of all. It will be seen upon critical examination that these surfaces present three distinct arches, varying in relation to each other according as the temperament of the individual varies. These arches are located as follows:

At the cutting or occluding margin.

At the middle or largest diameter.

At the gingival margin.

The first or occluding margin arch is of the shape of a parabola; either correct as to this form or varying from it in the region of the cuspids in making somewhat of an angle while keeping the general curve form, and as it extends backward the line is nearly straight. The arch at the middle division of the teeth is more flat between the cuspid and the angle in the cuspid region is more pronounced with less of a curve and more of an angle; and as it extends backward the line is slightly curved.

The gingival arch is larger than either of the others; more flat in the anterior portion; curve more prominent at cuspid and the line backward describing somewhat of a circle as it proceeds backward.

To show this more clearly I have prepared some models with the teeth cut transversely at the points mentioned as locating the arches.

(a) The occluding margin arch.

(b) The middle arch.

(c) The gingival arch.

For some time I have been observing the changes that occur in the jaws after the loss of teeth. One of these changes is, that as a rule the buccal teeth, if set directly over the ridge as it appears at this time, the teeth will as a rule be too far within the arch. The change is much less on the palatal and lingual side than on the buccal. The prominent portion of the ridge after absorption seems to be located at the inner margin

of the alveoli except in cases where these crypts have been filled with new bone tissue, instead of the alveolar process being absorbed.

A correct imitation of the arrangement of the natural teeth cannot always be obtained, if the plan of setting the artificial teeth directly over the ridge as it appears is followed. Nor can the best results be secured either in appearance or for the purpose of mastication; nor for the full use of the tongue and adjacent muscles.

I know this is contrary to all accepted doctrine, but a little experience in regard to it will satisfy most any one that the statement is correct. The line of occlusion is a typical one in every arrangement of the natural teeth; namely a line extending upward as it goes backward from the anterior occluding margin of the central incisors of the upper teeth; and the same general direction back of the cuspids for the lower teeth; the anterior lower teeth underbiting the upper ones with radical variation.

It is very rarely that this arrangement is reproduced in the artificial arrangement; nor can it be reproduced in but few cases unless the teeth are set outside of the ridge which corresponds to the position of the natural teeth occupied. When this is not done the scope of the lateral motion of the jaws is diminished.

A careful examination of the two sets of models of the natural teeth will more clearly illustrate my meaning. Notice also the relation of the antagonizing teeth to each other; the inclination of the teeth themselves both laterally and posteriorly; the manner in which the outer and inner cusps are adjusted; also the level (so to speak) of the masticating surfaces in regard to the long outer cusps of the superior teeth and the long inner cusps of the inferior teeth.

These observations will also show where the prominent part of the ridge will be situated when the teeth are gone.

One cannot properly set up artificial teeth until all the peculiarities of the natural teeth are familiarized and where the variations are most likely to occur. This information can only be secured by the careful study of *models* made from the *natural* teeth and the mouth.

I think that the most that is known by the profession in regard to this subject is what has been learned by one operator following another in obtaining the best conditions they could without a study of the conditions that exist in the mouth when the teeth are for the most part in their places. The attention is then engaged with the saving of the natural teeth and no observations are made that would assist one's judgment in restoring normal conditions when the patients present themselves without any teeth.

If this paper does not excite your interest in this kind of study, there will no good come of it, because there is no set rule which, when

well followed will be a guide for the arrangement of a set of teeth. Each set *must* have its individuality, and it does not so much require that one shall be an artist or have artistic instincts as that one should know the natural conditions as they exist.

Periostitis.

The following from the *International* was presented at the American Academy of Dental Science by Dr. Bradley :

“ Where there is evidently periostitis, coming on after the filling of a pulpless tooth, I have prescribed a slight cathartic in the first stage, and if there is no beneficial effect from that, I have then prescribed a pill made of one grain of opium and two grains of camphor. I invariably divide the pill and give the patient one-half the quantity to be taken when in bed and prepared to go to sleep; if they are not asleep in one hour they must take the other half of the pill, and I must say that I have had very satisfactory results from the use of this opium and camphor pill. One case in which it worked admirably was that of a young boy, twelve years of age, in whose case it was necessary to devitalize a sixth-year molar. After treating the tooth I filled it, and apparently everything was satisfactory, and he was dismissed. The next day was a wet one and it seemed to strike him as a good day to go fishing. He came home thoroughly wet, with a sore throat as the first symptom, and during the night his tooth began to ache, and by morning a very severe periostitis had developed. I tried to subdue it by external applications, the capsicum plaster, etc., but nothing seemed to relieve him until I gave him this opium and camphor pill. I have not seen him since, but some of the members of the family say that he went to sleep that night and had no further trouble from the tooth.”

The Oldest Human Teeth.

According to *Invention*, “ Two teeth have been found at Tanbach, near Weimar, which are claimed to be the eldest human teeth yet discovered in Europe. In all probability they are the teeth of a cousin of our friend *Anthropopithicus Erectus*. One is a milk molar tooth, the other a permanent first molar of the left lower jaw. The latter shows a striking resemblance to the corresponding tooth of the chimpanzee, but it differs materially from those of the gorilla or ourang-outang. From what can be inferred from this find, modern teeth have largely shrunk in size from those of our early prototypes.—*Journal Brit. Dental Asso.*

Third Set of Teeth.

The Sunday *Herald* of Syracuse, New York, report a case at considerable length of one James Slattery, of that city, who has apparently erupted late in life a portion of the full denture with the prospect of more teeth presenting in the near future. Dr. S. B. Palmer, of Syracuse, made an examination of the case and reports as follows:

"In the inferior maxilla are eight teeth located as follows: four incisors and two cuspidati corresponding with the cuspidati of the superior maxilla, and two small bicuspid on the right side. The cuspid on the left side and the second bicuspid on the right side are somewhat loose. The alveolar process does not extend up and entirely around the roots. The other teeth are firm and of usual size and length, but are somewhat overlapped from crowding and discolored by smoking; in other respects they present the appearance one would expect at his age.

On the left side, in place of the posterior teeth, ordinarily found, are three parts of teeth, resembling roots, having grown up partially out of the gums. They are not firm or well-developed teeth. The man insists that they also appeared within the time mentioned, two years previously, and that they belong to the set. One is loose and turned against the cheek, and will require extraction. The other portions of the jaw show no signs of further eruption of teeth, as considerable absorption has taken place.

An examination of the superior maxilla shows that the third set, more numerous than those in the inferior, will soon make their appearance. The jaw is thick and full nearly all the way back, raising the lip and giving the fullness peculiar to a child's jaw of six or seven years, or about the period of the eruption of the teeth of the permanent set."

The history of this singular case is as follows: James Slattery is a well developed man of six feet, two inches and weighing two hundred and thirty pounds. At the age of eighty-seven he was edentulous, having lost his second set of teeth. At about this period he noticed a painful condition of the gums, or, as he expressed it, "they began to ache badly," and for two years they continued to erupt in the inferior maxilla and will, in time, develop in the superior."

This seems the best attested case case of third dentition we have met with on record, and it is hoped Dr. Palmer will secure testimony as to the character of the set prior to becoming edentulous through advancing years. The dental profession has regarded a third set of teeth as a myth, and with some reason, as most of the so-called third sets have proved, on investigation, to be simply delayed dentition of the regular second set.—*Ed. International Dental Journal.*

Treatment of Alveolar Abscess.

The following was presented at the Vermont State Society and published in the *Dominion Dental Journal*. "Regarding the treatment of alveolar abscess Dr. G. Lenox Curtis said he could best serve the dentists by giving them a practical demonstration. He soon found a willing patient among those present.

Allow me first to show you how to find the affected tooth. With this heavy steel instrument (one the size of an ordinary plugger) percuss the teeth as you now observe me doing. Get the resonant tone as you find in the healthy teeth, and continue around the arch until an abnormal sound is detected. When the diseased organ is reached, as is here clearly demonstrated, the tone is dull, and as I have named it, leaden, as if the instrument came in contact with a yielding substance. You will get a similar tone to this in cases of pericemental inflammation. While the enamel is usually discolored in these cases, this and the list of hot and cold applications to the tooth is not always reliable in ascertaining its vitality.

Here we find the pulp of the left central incisor devitalized, and the tooth abscessed; the fistulous opening of the gum directly over the lateral incisor. This is not an uncommon occurrence, for we frequently find the fistulous opening far away from the source of trouble. In such cases I advise the alvatomomy to take place directly over the apex of the root. The fistula will usually cure and heal of itself after it has been thoroughly cleansed and carbolic acid forced through it, or even the burr of curette. First, I will open into the pulp chamber from the palatal surface, making the opening large enough to allow free access to the canal, which as you see I ream out with the Gates Glidden drills, of various sizes, until I am positive of having reached the apex.

Thoroughly cleaning and sterilizing the canal and drying it with the Darby points, which are the best and most satisfactory for perfectly drying the canal, again sterilizing it by the hot-air blast until as you see the patient is in pain from the intense heat it causes, we have the dentine dry, and it will receive the chloroform like a blotting paper, which, by its capillary attraction, draws the fluid to the apex and into the open canaliculi. The chloroform is best introduced into the canal by means of a hypodermic syringe. The gutta-percha canal points I now place into the canal, and the chloroform immediately attacks them and forms a chloro-percha, which I believe forms a more perfect canal-filling than any other material. The canal is now packed solidly with gutta-percha, and at some future time, the cavity covered with gold.

I will now open through the gum and alveolar process to apex of

root with this spear-pointed drill, first, as you see, injecting cocain into the gum through which I am to operate. I now, with this rose-head bur, pass it beyond the apex into a cavity in the alveolar process made by the abscess, which is as large as an ordinary white bean, bur away the sac and freshen the edges of the bone, and with this curette scrape out the debris and follow this by thoroughly syringing the cavity with peroxid of hydrogen, hoping to boil out all remaining fragments. Now, to render the part in as normal condition as possible, I force into cavity a hot 1 per cent. solution of chlorid of sodium. The after-treatment consists of keeping the face frequently in ice-water to prevent the accumulation of pus and the face swelling.

Should any purulent discharge come from the wound within the following day or two, it should be syringed out within the cavity as before, and inject two or three drops of pure tincture of iodine into cavity and leave there. This repeated, if necessary, every two or three days should be sufficient to effect a cure. Over-treatment in these cases is too often cause of failure."

A Hint on Gutta Percha Points.

After lancing an abscess it is often desirable to leave a cone of medicated cotton in the opening. If we carry it on a broach it will not always slip off. If we carry it in with pliers we distend the highly inflamed walls to the size of the cotton and pliers, plus the space we open the pliers to free the cotton, which is always withdrawn somewhat with them.

The above unnecessary pain and trouble can be avoided, and a cotton cone carried positively to the bottom of the the opening, by dipping a gutta-percha point in chloro-percha and, while still sticky, wrapping it with cotton to make a cone. Then, when the cotton is on, dip the tip end in the solution, and it will go to the bottom every time, with the least amount of pain to the patient, as every motion counts.—G. A. Bronson in *Dental Digest*.

Impure Alcohol.

A correspondent writes that he has "ruined many gold fillings by the use of inferior alcohol" in his annealing lamp—an observation which we have occasionally heard made by other practitioners. There seems to be no good reason why certain impurities in alcohol when used in annealing lamps should not impair or destroy the cohesiveness of gold foil. Will anyone who has had experience in this respect kindly favor us with a report of it for publication.—ED. *Dental Cosmos*.

The Recent Discussions on Pyorrhœa Alveolaris.

Looking for light on this unconquered and, as yet, not understood disease, we have been more confused than enlightened. The most of the papers thus far read and discussed throw but little light on the subject, and we should say had generally a tendency to confuse the reader, rather than to help him. The prominent point in most of them seems to be an attempt to show that the uric acid theory is incorrect. To an honest observer, looking for aid on the subject, there is much to bewilder and little to assist. For instance, take the discussion of Dr. Talbot's paper, read before the Academy of Stomatology, at Philadelphia. There were about as many theories and methods of treatment as speakers; pyorrhœa could be cured by removing the deposit or by not removing; some claimed that nearly all cases could be cured, others that there was no cure except the forceps.

The question arises, how far are we justified in assuring a patient suffering from the disease that his case is curable? If the tooth is comparatively firm in the socket, we should say it is fair to entertain a reasonable hope of preserving it for some time with proper treatment. But when a case presents itself where pressure on the grinding or cutting edge of the tooth forces it some distance back into the socket, and upon removal of pressure the tooth drops back again, there is no living person who can cure such a case. In these cases, we might say invariably, the end of the root is denuded of periosteum. Even where such teeth can be made absolutely free from deposits and held firmly by metal bands, their loss is sure to follow, and they are even less likely to be retained by tying with silk ligatures and attempting to hold in place until new bony tissue can form around them. Therefore, treatment of such cases is only a torture and useless expense to the patient and a waste of time to the operator, who should be able to employ his time in a more useful way.

In the treatment of hopeful cases they will improve or retrograde as the patient's physical condition changes, and we should say that constitutional treatment should accompany local.

There is another class of hopeless cases, where a deposit forms on the roots without any destruction or disturbance of the tissue around the neck of the tooth. This occurs many times near the ends of the roots of molar teeth, and sometimes between the roots. We have had a few such cases, the suffering being intense and the only relief lay in the forceps. We are aware that some writers deny the existence of this form of the disease, they not having noticed it, but this is all the worse for their observation, as there can be no doubt that this form exists, and it is, in our opinion, the worst phase of the trouble.—*Editorial Dental Digest.*

Peroxid of Sodium used Dry.

For some months I have been using sodium peroxid in a manner to or identical with that recommended by Dr. Schreier with the potassium-sodium alloy.

The rubber-dam is applied and the canals freely opened; a fine iridium broach, which has been roughened, is dipped in the sodium peroxid powder and carried into the canal dry; each canal is treated to three or more applications. In a few moments effervescence indicates the chemical change consequent upon bringing this salt in contact with putrefying matter. The action of this agent is less violent than that of the kalium-natrium, and quite as effective. As soon as effervescence ceases the canals are washed out with a weak solution of sulfuric acid, dried, and other applications of the sodium salt made.—H. H. BURCHARD, in *Dental Cosmos*.

Solder for Platinum Crowns or Bridges on which Porcelain is Fused.

The addition of a few grains of platinum to pure gold makes a solder upon which pure gold will readily flow. Upon small work it is well within the compass of the laboratory blow-pipe, and I find it, on account of its high fusing, rather safer in the porcelain furnace.—WILLIAM H. TRUEMAN in *Dental Cosmos*.

Demands for Rubber.

The rubber trade has profited enormously by the demand for bicycle tires. A well-known dealer in rubber states that in the past eighteen months the pneumatic-tire makers have purchased \$5,000,000 worth of crude rubber.—*Rubber World*.

New Publications.

LEHREBUCH DER CONSERVIRENDEN ZAHNHEILKUNDE. Von W. D. Miller, Professor in the University of Berlin. Leipzig: Published by Georg Thieme, 1896.

There is one thing that characterizes all the work of Dr. Miller, and that is thoroughness, and it is fully as apparent in

this book as in all other writings of this eminent dentist. The work comprises 416 pages, divided into five sections and subdivided into eight chapters. As its title indicates, it is a treatise on conservative dentistry, well arranged and concisely written. It treats of the therapeutic defects of the dental tissues and their treatment other than filling. The subject of filling of the teeth is then taken up and considers the various filling materials, instruments and their manipulation, methods of examination of the mouth and teeth, methods of excluding moisture from cavities, treatment of sensitive dentine, shaping of cavities, and manner of filling with the various materials, use of the matrix, etc. 250 pages being given to the consideration of the above subjects.

Following this the author takes up various diseases of the teeth and associate parts and treatment for same. Also treats on bleaching of the teeth, cleaning of teeth, care and treatment of deciduous teeth, etc.

The work is thoroughly up to date and should be well received by all German reading dentists. Such carefully prepared works as this are a credit to the author and the profession.

ANNOUNCEMENT.

P. Blackiston, Son & Co., Philadelphia, have just issued a neat catalogue of medical and dental books, containing half-tone engravings of about fifty of the popular authors of the day. They have introduced a new feature in way of sending books on approval to any address in the United States.

SOCIETIES.

Northern Ohio Dental Society.

At the annual meeting held in Cleveland, June 16-18, 1896, the following officers were elected for the ensuing year:

President—J. F. Dougherty, Canton.

Vice-President—L. P. Bethel, Kent.

Recording Secretary—F. W. Knowlton, Akron.

Corresponding Secretary—L. L. Barber, Toledo.

Treasurer—Charles Buffett, Cleveland.

Executive Committee—L. L. Barber and D. A. Allen, Toledo ; J. F. Siddall, Oberlin.

The next place of meeting will be at Put-in-Bay, Ohio, June, 1897.

The National Association of Dental Examiners.

THE twelfth annual session will be held at Saratoga Springs, N. Y., commencing at 10 a. m., Monday, August 3d, 1896, and continuing in session during the proceedings of the American Dental Association. It is earnestly requested that all State and Territorial Boards of Dental Examiners will send delegates.

CHAS. A. MEEKER, Sec'y and Treasurer,
29 Fulton Street, Newark, N. J.

Illinois State Dental Society.

THE thirty-second annual meeting of the Illinois State Dental Society was held at Springfield, May 12 to 15, 1896. A good program was carried out and a large attendance was present. The following officers were elected :

Pres., C. R. Taylor, Streator ; Vice Pres., E. B. David, Aledo ; Sec'y, Louis Ottofy, Chicago ; Treas., E. D. Swain, Chicago ; Librarian, J. R. Rayburn, Fairbury. The next meeting will be held at Peoria, beginning on the second Tuesday in May, 1897.

LOUIS OTTOFY, *Secretary*,
Masonic Temple, Chicago.

Southern Dental Association

Will be held at Ashville, N. C., on July 28th, 1896. Headquarters at the Battery Park Hotel. [This meeting has been changed by order of the executive committee since the sending out of the notices last month, as they found they could not get the necessary hotel accommodations at Lookout Mountain. Therefore, they have definitely decided to hold the meeting at Asheville, N. C.]

S. W. FOSTER, Recording Sec'y.

THE OHIO DENTAL JOURNAL.

VOL. XVI.

AUGUST, 1896.

No. 8.

CONTRIBUTIONS.

Practical Suggestions.

BY S. O. SAWYER, D.D.S., TRAVERSE CITY, MICH.

I. In drilling cavities in artificial teeth, when without diamond point, pulverize your worn-out carborundum wheels, mix with oil and note how much faster the bur will cut than with oil alone. I find the shank of a small bur ground into a three-faced drill will cut the groove perhaps faster than anything else, of course I cut out as much as possible at first with a small carborundum disc.

II. In making a partial superior plate, anterior teeth, we occasionally come across a case where occlusion is so close it is impossible to get enough thickness of rubber over ridge for the requisite strength. If patient cannot afford metal plate, adapt with pliers a piece of platinum over edge, punch quite full of holes for better adhesion of the rubber, use a little care in packing and you will have a much stronger plate than the rubber alone.

III. In making a bridge, especially the bicuspid, when occlusion is close and is impossible to make an inner cusp, but still wish the outer cusp long to correspond with the cuspid, also desiring a masticating surface, select a thin faced bicuspid tooth

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of proper length of bite, back with gold, same as any tooth, and before bending down the pins take a small piece of gold, same width of the tooth, punch holes to correspond with pins in tooth, then bend it at right angles just below holes and place over backing, bend down pins and after solder is flowed in, this will serve as inner cusp.



Fig. 1 represents a tooth with backing.

Fig. 2 a tooth with backing and an extra piece of gold bent at right angles for inner cusp and pins bent down ready for investment. If necessary to protect end of porcelain put a tip on the tooth.

Fig. 3, tooth after soldering.

Fig. 4, tooth in relation to the superior alveolar ridge and lower tooth; showing how close the occlusion may be and still have an inner cusp for masticating and a long outer cusp to correspond in length to cuspid tooth.

Systemic Remedies.

BY H. L. AMBLER, D.D.S., M.D., CLEVELAND.

THE purpose of this paper is to suggest a few of the systemic remedies for relieving functional nervous troubles in patients who present themselves for dental operations, so that reflex irritation of the whole nervous system may be reduced to a minimum or entirely obliterated. No doubt much can be accomplished in this direction, and we suggest that others continue the work, that at some future time they may give us further data, accompanied with names of drugs, formulæ, and method of exhibition, especially in phagadenic pericementitis.

The sense of hearing is always noted by the patient, as affected by the use in the mouth of sandpaper disks, carborundum strips, files, and all forms of cutting instruments which are

used in the engine. Perhaps the one which makes the most noise is a large coarse corundum wheel. Much of mechanical irritation and vibration can be eliminated by discarding the cable and using the Doriot or Shaw-White engine, or any cord engine. To have the nerves toned up to a healthy condition, so that these noises and unpleasant sensations will be tolerated, or for the time being to partially obtund their sensibility by administering systemic remedies, is a desirable consideration. Proceeding on this plan, if a patient has neurosis from gastric trouble, he should be cured or relieved by proper remedies, possibly by administering Phillip's milk of magnesia, zymocide, nux vomica, etc., before proceeding to operate, the length of time for their exhibition would be varied according to the case.

In neurasthenia from any cause, perhaps we have the most difficult cases to operate upon. Patients in this condition do not wish to be touched because they are so irritable, much less do they want sensitive teeth excavated. No doubt this condition keeps some patients away from our offices. Here the nerves need nutrition, which is obtained through the blood; thus it must be supplied with proper food, so that it in turn may build up the nerve cells. If the remedy is supplied in form of drugs, iron, quinine, and the phosphates would be advisable.

The reflex irritation from the brain, produced by fear, has been overcome in nearly every case by hypnotic suggestion, as demonstrated by Dr. Sudduth and others. Perhaps this method will not come into general dental use, but to those skilled in its application it is a success. It has been employed for years in general hospitals abroad for minor surgical operations, rheumatism, hysteria, chorea, etc. Once in a great while a young, timid patient, when occupying the chair for the first time will faint, caused by dread of what they think will surely happen in the form of pain; and occasionally patients will faint habitually when they go to the dentist, whether they are hurt or not. Both local and constitutional influences affect the teeth, and we can often correct local causes by systemic treatment. Nervousness, accompanied with pain, arising from a low vital, or unoxigenized condition of the blood, is often relieved by inhaling nitrous oxid. Patients who are anæmic and more or less prostrated nervously, would certainly dread to visit the dentist, and before doing so should guard against fatigue, over excitement, loss of sleep, too

much coffee, or going too long without proper food. In health the nervous system is neither excited nor depressed; it works in harmony with its requirements, but if you apply irritation, as for example, cutting in sensitive dentine, then this harmony is destroyed, and the amount and extent of irritation is in proportion to the amount and extent of derangement caused by the cutting. Bichat says—that life rests upon the tripod of innervation, respiration and circulation; and whatever affects one of these legs, affects the whole body. This statement can be fully appreciated by a very large number of persons who can testify that excavating sensitive dentine causes direct irritation and greatly affects the leg of the tripod called innervation, thus irritating the system at large: the patient becomes restless, shrinks, jumps, holds his breath, increased flow of saliva, headache, nausea, muscular spasm, desire to urinate. The nervous system has a mode of action of its own, and this action is susceptible of exaltation, depression or deprivation. The brain, spinal cord and every nerve periphery requires a certain amount of and a certain character of blood for its proper nutrition. Too much and too nutritious then we have over stimulation; too little blood and too poor, then we have derangement from lack of pressure and nutrition.

Nervine for general nervous disturbances, tinct. valerian and gentian, equal parts, in teaspoonful or tablespoonful doses, according to indications.

When necessary to keep up a continuous impression, use ten grains bromide potassium dissolved in a wine-glass of water; administer this amount from two to four times per day.

For lassitude and anæmia, use Dr. Weld's non-alcoholic tincture of iron, or tincture iron one ounce, sulphate of quinine one dram; administer fifteen drops of this combination three times per day.

Why Gold Fillings Fail.*

BY H. C. ROCKWELL, D.D.S., BENTON HARBOR, MICH.

THE causes which lead to the failure of gold fillings may, for convenience, be divided into three classes: First, those over which the dentist has partial control; second, those over which the patient has partial control, and third, those beyond the control of either.

It may, I think, be assumed, that a perfect gold filling placed in a perfectly formed and developed tooth, with that tooth in the normal mouth of a person in absolute health, and who cares for that tooth and filling in a proper manner, will *not* fail.

Of all the conditions above mentioned, the dentist has partial control only of the first one.

Supposing that he possesses the necessary skill to put in the perfect filling, in how many of the cases under his care are all the conditions such that his skill will accomplish the perfect result? In how many instances are his patient's nerves right, the view of the cavity perfect, the light sufficient, and all instruments and adjuncts so attuned that every part and movement is exactly in harmony? I think we may say never.

But conceding, for the sake of argument, that the perfect filling can be made, so far as manipulative ability is concerned, the question then arises, can it be made of gold? I think not. Gold and tooth structure are vastly different materials. If you wished to hermetically seal a cavity in a tooth in any other place except in the mouth, gold would be almost the last substance you would select. Even without entering into the question of its electrical incompatibility, which has been very ably maintained by eminent dentists, it is, in a mechanical way, a material difficult to use for an air and moisture tight plug. In fact, if we except its unchangability and indestructibility, it lacks nearly every quality we desire for the ideal filling.

You have seen an incandescent electric lamp; there is an instance where it is necessary to have a metallic plug through a very different material, glass; and that plug must be air and moisture tight or the lamp is a failure. The little plug is scarcely

*Read before the Southwestern Mich. Dental Society, April, 1896.

larger than a hair, and is made of platinum. Do you know why? Because platinum and glass expand and contract with heat and cold just alike. It would have been a fortune many times over for the man who found some other metal, or alloy, that would answer in the place of platinum, but it has never been done.

If, on heating, it expands a trifle more than the glass it cracks it, and that makes a leak; if, in cooling, it contracts a trifle more, there is a leak around the little wire.

Now if it is so difficult to make this little plug, as I said, scarcely larger than a hair, moisture and air tight in varying degrees of heat and cold, what do you think of the probability of a gold plug remaining air tight when it is 1,000 times as large, and varies so much from tooth structure in expansion and contraction from changing temperature? Months is a satisfactory life for the lamp, but years are expected for the gold plug—because “Mrs. Jones has one that has been in ten years,” and of course Mrs. Smith’s should stay also.

In regard to the first qualification, that of a perfect filling, I may then say, that it can not be made of gold; and, if it could be, no man ever had conditions so favorable that he could make it.

The causes of failure, partially in the control of the patient, are lack of proper cleanliness, improper hygienic conditions generally, and the application to the tooth and filling of improper substances or substances of improper temperature.

Absolute cleanliness is, of course, only theoretical, like the absolutely perfect filling; but the unfortunate fact is, that our fillings have to contend in very many cases with the contrary conditions of absolute uncleanness. I think, within my experience, that it is on the safe side to say that not one person in one hundred gives his or her teeth, (and the “her” does very much the better), anything like proper care.

Decomposing foods, to breed bacteria, are left for an unlimited time to cover the margin between a gold filling and the tooth; and that margin perhaps made less perfect than at first by the unequal expansion and contraction of the filling and tooth from the application of scalding tea and frozen cream, it is, I think, no wonder that by and by some microbe gets his pointed snout into the joint, and failure begins. In fact, I often wonder, considering how very careful people are to keep the dentist from

getting a good filling in from the beginning, and how very careless they are in keeping that filling good after they have gotten it, that fillings do not fail much sooner, and more surely than they do now.

So far as proper food and proper temperature of things put in the mouth are concerned, we all know that is of little use to advise. One person in a thousand may pay attention for a time, time, but it shortly comes to naught.

In this country, as the young lady told the Englishman, "We eat what we can, and can what we can't." Nothing is more certain than, if we place good teeth against good eating, good digestion against gratified appetite, that teeth and digestion will have to take "to the woods" every time.

We refuse to eat such food as would make good teeth—we insist upon eating that which destroys them. We are guilty of the sin of omission, and that of commission; we burn the candle at both ends.

The causes of failure beyond the control of either dentist or patient are imperfect substance, abnormal development, insufficient nutrition, bad articulation, and unhealthy or vicious secretins.

The last three mentioned may sometimes be modified by the advice and care of the dentist, but very many times are beyond his control.

The Deacon Bedott, when he said to his wife, "Sez he Silly," and she "said to him, sez she, what?" very sapiently remarked that "We're all poor critters."

Just so far as we are "poor critters," just so far as we differ from the perfect man or woman in our development or health, we may find abundant cause for the failure of fillings in our teeth.

The same causes that influence teeth to decay before filling, with the additional one added, that filling is but repair and, in most instances, not so good as the sound tooth, are those that bring to grief many a golden moment of skill, patience and suffering. With many of us, our teeth are a full box of tools, nail drawers, wire benders, scissors and vise—we carry the whole outfit in our mouths, because we are too lazy to go to the tool bench.

If I were to give the causes of failure in the order in which they are most important, I should say, by far, the most fillings are lost by the utter lack of proper care of the teeth on the part of the patient.

I have, in thirty-seven years' experience, seen many a mighty poor filling preserve a tooth well when well cared for, and I have seen many a mighty good one fail in a very short time when that one element of success was lacking. In fact, with the other causes for failure done away; with the teeth good, the health good, and the care good, most gold fillings would preserve for many years, if inserted with only a very moderate degree of skill. The patient should therefore, when inclined to expect too much from a filling, be plainly informed, that upon the care bestowed far more depends than upon the perfection of the filling itself, so far as reasonable permanence is concerned.

Washington Irving, in that veracious chronicle, "Knickerbocker's History of New York," relates that old Peter Stuyvesant, when about to take his departure for some time from his beloved city for the capture of Fort Christiana, made a speech to the inhabitants thereof from the deck of his sloop, in which he exhorted them to behave themselves, or, if they could not behave themselves, to behave themselves "just as well as they could."

I have often thought that there was much philosophy in this when applied even to gold fillings. Let us as dentists put them in, if we can not perfectly, at least as perfectly as we can. Let us as patients endeavor to assist the dentist in securing a good operation, instead of doing, as is many times the case, all we can to prevent it; let us care for these fillings as well as our knowledge and opportunity will allow; let us live in such a way that our health, secretions, and hygienic condition will be as good as they can be in such "poor critters" as the sins of the fathers, visited upon the children for generation after generation has made us, and doing those things, all of us, we will at least have many fewer gold fillings fail than is now our unfortunate experience.

Advantages of Compressed Air in Operating Room and Laboratory.*

BY DR. J. F. HIXON, MICHIGAN CITY, IND.

THERE are but few dentists within my knowledge who use air compressed in any way but by the pressure of the hand or

* Read before the Southwestern Michigan Dental Society, April, 1896.

foot upon a rubber bulb. It has its advantages when used in this way, so has the hand-drill its advantages, but how many of us would expect to complete a day's work that we lay out for ourselves at the present day, if the hand-drill and excavators were all we had with which to prepare cavities.

The engine came and came to stay, so has compressed air, for we have need for it as well as the engine.

Compressed air has been in use for some years in a few offices and to those must we look for instruction with regard to its uses.

Having only had such an apparatus in my office a couple of months, I have been able to put it to but few of the uses I have in mind. It is simple and quite inexpensive when compared with other things we use. It consists of a common hydraulic air-pump, placed above my laboratory sink, connected with the city water-pipes. The air is piped from there to a common kitchen hot-water boiler or tank, thence to my operating chair. I find it best to make metal piping go as far as possible, using as little rubber tubing as is necessary, for it is insecure, and the oxygen of the air soon destroys it.

At the chair I find in it a step nearer to that ideal which, when reached, will be a blessing to both patient and operator, for then the public will no longer fear the dental office and painless dentistry will be a reality.

One of the frequent causes of pain and discomfort, during and succeeding the introduction of a large filling, is the excessive use of ligatures and clamps for the retention of the rubber dam. These may be dispensed with in most every instance, after having used them as aids in the first adjustments. You will find you need not depart from your present methods. This is a kindness to our patients as it is a duty to ourselves, for in so doing we may avoid unnecessary pain.

How frequently we hear, "now, doctor, have you got to use those horrid threads and that clamp?" This cry, so often heard, must call into use different methods than those in general use. We apply the dam in the usual way, take up the excess saliva, with cotton or bibulous paper, then with a strong blast, warm if need be, dry the tooth and dam and remove those instruments of torture. In the average operation it will remain in place until the work is completed; of course barring accidents which might happen even where the clamp and ligatures are used.

The chip-blower, an innocent thing it itself, but a cold blast from it on sensitive dentine will produce pain almost unbearable. Warm air, for chip blowing, needs no indorsement. Those who have an electric current at hand need but call in the electrician; those who have not may use a coil of metal-tubing heated by an alcohol flame to suit the case. The stronger the blast the more heat is needed, as by a little care on our part we obtain the desired result. A cavity kept thoroughly dessicated is less sensitive to the bur than one which is not. Then with a delicate nozzle and air well heated, we have an excellent root-canal dryer, one that in my estimation has no peer. With the air at the temperature of the room, which is soon obtained, we find an excellent agent for cooling modelling composition. Insert the nozzle under the lip of patient, and the impression is soon ready for removing. This same blast will do very well when directed upon a filling that is being finished, to prevent over-heating from the effect of the stone or sandpaper disk.

With a strong pointed blast it may be useful to reveal hidden pieces of tartar that are found in pyogenic pockets and between the teeth. It hastens the evaporation of volatiles, and is better for the reduction of temperature when used for the lessening of pain produced by the bur during the process of excavating. It will be found to be of great value when used in bridge-work and for setting crowns. One of the frequent causes of failure in this work is from not having the foundation thoroughly dry just at the moment of setting. With a pressure of about twenty pounds we can not only dry the root, but the force is great enough to drive away blood and saliva, making it easier to do this work properly.

In treating teeth that have cavities where pulps are nearly exposed, where can we find anything better as a capping material than partially decalcified dentine, when we know we have it thoroughly dessicated. How can that be better accomplished than by a gentle flow of warm air at the temperature of the blood. The so-called hot-air syringe must be heated several times to accomplish this operation with the same freedom from pain. This requires some patience, as you all well know. Flow over the part some liquid cement and we have an excellent capping. A strong blast is a very useful helper in the inserting of the so-called sub-marine fillings.

The drying process is a very important step in properly preparing cavities for the reception of the filling. It reveals defects, defects that might otherwise escape our notice, such as softened dentine, chipped margins, opening to root-canals, etc. The failure of many fillings may be attributed to the presence of moisture. Thorough drying is not a promoter of decay.

Compressed air may be used with a common atomizer for reduction of temperature for painless extraction. It will produce a lower temperature in less time than the hand pressure, as we have a steady blast that may be regulated to suit the case. With quick work we may accomplish some very satisfactory results.

I have seen no such an arrangement, but there is no reason why some inventive genius should not utilize this power to drive the pneumatic mallet. It can be made to remain as strong as we wish by having a safety-valve or blow-off on our storage tank. In this way keeping the same pressure all the time.

With the thermometer at ninety degrees in one's room, and some difficult case on hand, we could, by fastening the nozzle a few feet from the chair, have something that would keep yourself and patient in better humor throughout the operation. An electric fan might be better, but "any port in case of a storm."

The advantages in the laboratory are not so many in number, but they play an important part in one's daily life. The first to present itself is in connection with the blow-pipe, which need only to be mentioned as we have all used it in supplying the pressure with a foot-blower, and can readily see how much nicer a constant and steady pressure would serve. Then we have nothing to keep in mind but the work before us.

There are certain kinds of furnaces that depend upon a strong Bunsen blast for their heat. Our pressure will furnish that very nicely. It can also be connected to the gasoline reservoir of the Hoskins continuous gum furnace, and insure a steady combustion, which is very desirable.

Gold Filling.—Consideration of Minor Details.*

BY P. G. WOOD, D.D.S., CORRY, PA.

IN considering the subject which has been assigned me, it seems wise to leave its more weighty phases for discussion by those master-minds who have new and original ideas to present, and shall, therefore, content myself with simply calling your attention to some of the minor details; little things, which, when slighted, are the cause of many an imperfect gold filling. It is axiomatic that the perfection of any operation is largely due to the careful attention given to details, and gold filling is not an exception to the rule.

Taking a proximal cavity in a superior incisor, as a typical one for consideration, the first point to claim our attention is to see that the teeth are thoroughly polished and cleansed of all debris that may have collected between them or around the gingival borders. Now, it is a well known fact that a tooth is less sensitive when thoroughly dessicated, so it is better to adjust the dam before any excavating has been done, and in placing it in position let it embrace a large enough number of the adjacent teeth so that it will neither obstruct the light nor be in the operator's way during the remainder of the operation. A doily placed underneath the dam to keep it from the patient's face, will not only be duly appreciated by the patient, but will also tend to the successful completion of the filling, for anything that places the patient more at ease aids the operator. Further dessication of the tooth by the use of warm air will lessen the sensitiveness, and also aid us in detecting all unsound tooth structure. Now gain free access to the cavity, so that all parts can be plainly seen either by direct or reflected light, preferably of course from the palatine side; but it is far better, if necessary, to sacrifice some of the labial wall at the expense of the gold showing than it is to court failure by working in the dark. And I would urge the desirability of having the teeth slightly separated, if naturally very close or crowded. A few fibers of cotton packed between the teeth at the time the examination is made, should it be a few days prior to the operation, will greatly simplify it for all con-

* Read at Lake Erie Dental Society, Cambridge, Pa., May, 1896.

cerned, then when the teeth return to their normal position we will have the natural lateral contact, so much to be desired.

In shaping the cavity avoid all sharp angles in the margin, or deep pits within. Let graceful curves abound, and make sure that the margin of the cavity will be free, so as to be not only easily kept clean, but as nearly self-cleansing as possible when the teeth return to their natural position. A great mistake is often made, and subsequent failure invited, by leaving the palatine wall intact to build the gold against. Better cut it away and replace with gold than leave it to be broken out by the occlusion of the lower teeth in mastication.

Finally, before packing the gold, carefully polish the margin of the cavity with a medium fine strip, for a much closer adaptation of gold can be made to a smooth surface than to a rough one. In packing the gold let small pieces and small instruments be the rule, filling the most inaccessible portions of the cavity first, always keeping the filling, as it progresses, as nearly level as possible.

It is unnecessary to speak of properly contouring the gold, but it will not be amiss to caution against ruining a nicely contoured filling by using too large disks or wheels, and too wide strips in finishing. After the gold is packed burnish thoroughly from the middle toward the edges of the filling and repeat often during the use of strips or disks. Many a filling might be improved if this was thoroughly done.

And having ascertained from the dental supply agents that a very large proportion of the disks used by a majority of operators were of the larger varieties—above one-half inch in diameter—I would emphasize the statement by repeating that the large disks and wide strips are to blame for the *flat* condition of many of the fillings we see, which should be nicely contoured. And I conclude with the assertion that the greatest cause of all the imperfections in our gold fillings is not the operator's lack of ability to do better work, but it is due to carelessness in the minor details of the operation.

DISCUSSION.

DR. J. H. HEIVELY: I think there is nothing like making a separation between the teeth. I have seen those cases where separation was not made by wedging, but how much better it is

when the dentist can get free access to any part of the cavity, and have plenty of room to finish up and burnish.

DR. ANDERSON: I used to think that I could not make a good filling unless I had plenty of room, until about two years ago I went to Dr. Wood's office, and he called my attention to the preparation of a cavity. The first thing I said was, doctor, you have not made separation enough. I watched him until he was through, and it was as pretty a filling as I ever saw. He finished it up with fine burnishers and small disks and fine strips. I learned a lesson. I used to use the large disks almost entirely, but I have had more success in filling with smaller separations, and smaller disks than with the larger disks and larger separations.

DR. LIBBEY: I agree with Dr. Wood that those who separate the teeth for filling, as a rule separate almost too much. A great mistake is often made in using wide disks and strips. Be particular with the little things, but the greatest thing of all is that of cutting away the frail parts, polishing all edges, and having the line of your cavity to correspond with the curved lines of your teeth. You may show double the surface of gold, and yet there won't be more than half the display if you break away from the regular curved lines and have a more decided curve. I think that is what Dr. Wood alluded to in referring to the lines. In regard to finishing from the center down, you cannot get that swelled-out appearance of the filling without exceeding care.

DR. ELLIOTT: I don't care how skillful an operator is, he cannot perform an operation as well where he is hampered for room as he can where he has plenty of room, and I agree with Dr. Wood in narrow strips and small disks. They started out in the first place with making disks an inch in diameter, and then they came down to three-quarter inches. Finally they got them down to five-eighths. Now then, the largest disk I use is a five-eighth disk, and it is difficult to get a box of fine strips fine enough to finish a contour filling. And I agree with Dr. Wood in regard to finishing a filling, and about those swelled fillings, you can easily reduce such a filling by cutting it down until you get it to what ought to be the exact contour of that tooth before it was decayed.

DR. ———: I would like to ask Dr. Wood where he has a filling that reaches from the free margin of the gum to the edge of that tooth, does he invariably use the small disks?

DR. WOOD, I would say, yes. Of course I do not mean I would always use the very narrowest strip, but as a rule I think the strips the manufacturers furnish us are too wide.

DR. ———: I heartily agree with Dr. Wood in that. But I understood from his paper that he disapproved of the use of wide strips altogether, and I beg pardon if I misunderstood him.

DR. McALPIN: One point in the small disks which I would like to emphasize is, that they should be thickened rimmed disks. I think, too, that we ought to have even smaller disks than we do. How often it is that you cannot find as small a disk as you need.

DR. DUNN: In regard to separating the teeth I think there are few of us but what agree that a little space should be made, as long as it can be done without producing discomfort to the patient. Dr. J. A. Dunn, of Chicago, advocates the use of cotton and twine drawn between the teeth the day before. Those of you who have never tried that process have certainly denied patients the most comfortable way of separating their teeth. And if the patient lives some little distance away he can do it himself. And now, in speaking of gold and the finishing, a great deal can be done for the patient and for the dentist to prevent the necessity of the excessive use of disks and strips by the use of Rowan's extra pliable Pellets of Gold. I have been using this and find that it is excellent for contouring for the reason that the gold does not become rigid or crystalline after annealing, and you can fold it back and forth until you have it where you want it, and you can build up more nearly to a contour than with any other gold without having a great excess. The use of files of the proper shape at the cervical margin is a great aid. The Meriam is of triangular shape, and can be used without injuring the gum. No one has spoken yet of the matter of putting oil on these strips. It facilitates matters very greatly.

DR. LIBBEY: I want to speak of one thing in regard to separation. In March I was in Philadelphia and spent some time with Dr. Jack. One little point he gave me was this, in the use of fine white tubing. He takes tubing of different thickness and stretches it between the teeth, and the result of it is that you get a nice separation, and I have not had a single case where I made a tooth sore by using it.

DR. BRATT: I like it very much and use it, and know this is very good.

DR. ANDERSON: In separating the teeth I have found it very satisfactory to the patient to use gutta-percha; warm it and press it between the teeth. It is smooth and gives separation without a bit of soreness.

DR. STAUFFER: A wooden wedge will suffice in those cases where the cavity does not extend under the gum too far. I use a wooden wedge in cases where I can get one in, because it gives more separation, retains the space and protects the gum from the rough edges of your disk or strip. I find it is a good thing. Speaking about disks, I have heard no one speak of depressed disks which I like very much myself. I think they are really indispensable for contouring; that is, where you have space. You must have space. You can do a great deal more with depressed disks than with the other ones. Oil also facilitates the cutting and lessens the amount of friction by softening. It is surprising how much it aids in the cutting. If any dentist has not used oil I wish they would try it. I would like to ask, how do you finish where the filling is under the gum a good way? How do you finish with strips in those cases? From these men that use nothing but strips I would like to hear.

DR. WOOD: I think we all understand that the hints that were given in the paper are for ordinary cases and not for the extraordinary cases. Those cases which we sometimes meet with, the ordinary rules will not apply to. In those cases files are almost indispensable. Where a filling is under the gum it is almost impossible to reach it with a strip, but with those files which are so nicely adapted for reaching these, we can with care, finish very nicely. One point I would emphasize,—don't forget to burnish when it is finished. There is a chance for you to improve many a poor filling by burnishing, even during the filling operation; possibly I did not make myself plain in the paper. I did not mean to finish entirely from the center to the edges of the filling, but I did mean to burnish from the middle toward the edges; that is, in burnishing use that direction in the strokes of your burnisher. I like to see a filling well contoured.

Popular Dental Education.*

BY H. H. HARRISON, D.D.S., WHEELING, W. VA.

FROM the earliest history of professions it has been the general law to wrap the science in habiliments of mystery from the laity, or the people in general. This had the potent effect of keeping the people from knowing how much the professions didn't know.

In the ages of long ago this may have been admissable, but now with the great advance of civilization, education and science, this secrecy should be banished from the professions, and a more liberal tone extended and practiced.

The past experience has had the effect of bringing into the professions a great multitude of empirics and impostors, and the man who may hang out the sign of a doctor may be thronged with patients no matter how ignorant he may be in the science of medicine. Of course the law's design is to protect the professions by giving diplomas to the worthy, but how many get these degrees that do not merit them, and many more unscrupulous in practice, trail their diplomas in the dust by false representations and evasion of the truth.

To-day these latter conditions are having such an evil influence that very many worthy and good men and honorable, are almost compelled to take a back seat.

How can this difficulty be modified or overcome? This is what I am now to consider.

Popular dental education and information in the proper way I think will overcome most if not all this trouble, and also make our daily work lighter and easier, with better results.

A concise treatise on popular dentistry, carefully and deliberately prepared, and approved by good authority and presented to the people through our dental practitioners, will do the work we so much need. It would not do for any *one* dentist to do this, for his veracity might be questioned, and sinister motives attributed to him: but a dental society, with a large honorable membership, can do it without a question, and be first-class authority.

* Read at Lake Erie Dental Society, Cambridge, Pa., May, 1896.

Such a treatise must have a preface, setting forth the design and the good to be accomplished.

The main work would of course be written under the various headings necessary to cover the ground.

Now you may ask how this is to be done and who is to do it, and who is to furnish the necessary expense.

I would suggest that some society that would take it up, would appoint a committee of three suitable members to control it, and they ask members of the profession to write the varied articles, and the committee select the most appropriate of the articles presented, to go into this treatise.

Then the books would go into the hands of the publisher to be sold to dentists, to be used in their practice.

By such a work the people would be better informed as to the true status of dentistry ; as to whom they could trust as men of science and honor, and as to what constitutes a true dentist. It would define the line of duty between the family dentist and the family physician, where very many contentions are daily arising. It will place a serious stumbling-block in the path of the advertising dentist, who throws his picture-cards broadcast upon the streets, setting forth "my system of bridge-work is unequalled ;" "coralite plates ;" "my fresh vitalized air ;" "teeth extracted by my special process without pain or danger to patient ;" "teeth without plates, by my secret invention," etc.

It will show the empiric up in the boldest light. It will save millions of great suffering by saving teeth that should not be extracted ; curtailing the danger from dyspepsia, nervous troubles, eye and brain troubles, and who knows how much of that dread disease, lung consumption, may be averted by the food being properly masticated, so that perfect digestion, assimilation and nutrition may be accomplished.

We do know that defective mastication is the first step in the road of very many diseases. How much now can the dental profession bring to the human family of happiness and health more than they are doing, by a united effort? "In union there is strength," is an adage worthy of our consideration. For one hundred and fifty enlightened and educated dentists to affirm that a certain principle is true, is authority above any one man, and this is the only kind of authority that can have great influence with the people.

DISCUSSION.

DR. E. M. WOLFE said he heartily approved all that had been said and that he would like to see some effort made to show the people what true professional dentistry is.

DR. A. C. McALPIN said that while a popular treatise given to the public would do good it would reach only a portion of the people. He said he was for the right forming of the young instead of for the reforming of the old, and suggested that local societies give some instruction in way of lectures, to school children.

DR. W. E. MAGILL: I have had the most comfort from the intelligent patient. It is the ignorant patient who makes you the most trouble. We have educated the people by going to them and talking to them, but it seems to me now that our best education has been done in our office. If we practice intelligently we are talking to our patient all the time while in our office. It is to our advantage to show patients the intricacies of the methods we use. It is a living subject to them then. In my observation there has been great advance in popular dental education, I can see it and you can see it. I think we had better look at home for a solution of this question in the sphere of our own influence.

DR. W. E. VAN ORSDEL: In this way we reach only those who may come under our influence, and we know that the larger portion of our community are outside, so that I think we need to combine with our office education the education of the children as well, as suggested by Dr. McAlpin. If we could get dental hygiene into the schools, the time would come when the grown-up portion of our community would know the necessity of taking care of their teeth.

DR. J. V. ANDERSON: Our future patients are the children of to-day, and if we commence educating them to take care of their teeth they will be our most profitable patients in the future. Now you may tell them about the microbes, etc., and they won't comprehend you, but if we get them into our waiting rooms, and have a few slides with specimens of decayed teeth showing the microbes, and specimens with tarter showing the filth, then these little folks will go out and tell all over town what nasty things decayed teeth are, and I think it would be one of the best ways to educate the people in general that you can think of.

DR. C. B. BRATT: Are we responsible for the education of the people? I don't believe we are. The people will get dental education when they are ready for it. If they seek our service and are benefitted by it, they will know it and become educated thereby. But it is not our place to step out of our own sphere, and I do not think we are responsible for the education of the children.'

DR. McALPIN: I disagree with Dr. Bratt most emphatically. From the beginning of time it has been a law that there shall be unfolded to man an understanding of nature's laws in the capacity that he is able to receive them. Otherwise he would be at the mercy of the elements. Life itself is only a study of those forces that resist death. Just as consistent would a man who knows an antidote for poison be who withholds his knowledge from the public, as the dentist who knows the responsibility of the neglect of such distribution of knowledge. The punishment would be the same. The man who knows this and that and does not tell it, is a criminal, and it would be a criminality to hide his light under a bushel.

DR. HEIVLEY: While the dentist may not be entirely responsible, yet every person has a claim on our knowledge.

DR. H. E. DUNN: In this matter of education I have made a little effort, and delivered two lectures before a school, one before the teachers alone, and the other before the high school, and I have lived to see a great deal of benefit coming to those people from those lectures and talks. If we give the children the benefit of these talks it seems to me they have gained something their parents never had.

DR. MAGILL: As a profession we have been a little negligent in not assuming as much responsibility as we should. The city dentist says, "Now I will send you word when to come," and the patient comes when sent for. I suggest that we in the country can improve our methods very much and be far more useful to our patients in that way, and they will appreciate it as the years go by.

DR. LIBBEY: I think any book in this line given to the public would be a good thing, if we as dentists all over the country would prepare the people to read it. But to send it out before preparing the people would be a great mistake. We do not need to take up some subject and talk it threadbare while we

torture patients, but there can be some little point thrown out to impress them. So far as a little book is concerned I tried it some years ago. I got two or three hundred and gave them to my patients. My experience almost as a rule was that the parent coming back with the child would say she had never looked at what I had marked out for her to read. She was not educated up to that point, and while I found a few who were benefitted, the great majority never paid any attention to it, and therefore a distribution of anything of that kind until we educate the people for it, will be almost useless. Talk to them when you get hold of them; say some little thing. Let me offer an illustration. Six or seven years ago the Y. M. C. A. of Pittsburgh asked me to give a talk on teeth. In connection with some others (there was a course of talks given). I consented and went to a great deal of labor to prepare myself for that occasion. When I went there, behold the young men were boys from 12 to 15 years of age; 40 or 50 of them, and of what I supposed were young men, there was not a half dozen, and the subject I had so labored to prepare, was not fitted for my audience. It would be entirely too deep. Consequently I gave an extemporaneous talk on the care of the teeth, and then I told of the awful effects of continual use of tobacco on the teeth. And I know my simple talk did a great deal more good than my prepared address would have done to that audience. To-day there is a young man who often reminds me of what he learned from that simple talk. And there is the place to begin. Commence with the A. B. C. of dentistry, not with children only but with adults.

DR. WOLFE: I think we all are trying to reach the same end. To illustrate, will tell you what I sometimes do. It may seem hard and cruel, but is occasionally necessary. If a child or a young boy or girl comes into my office with bad teeth, I say, "Why you don't clean your teeth?" Ans.—"Haven't time." "Well, have you time to wash your hands and face in the morning?" "Oh, yes." "You would not sit down to breakfast without washing your hands and face, and yet your mouth is dirtier than your hands or face. If you had not time to wash your mouth you had not time to wash your hands and face, as one is as necessary as the other." The result was that a good many got ashamed and attended to their mouth thereafter.

DR. T. H. WHITESIDE: There are few of our patients but

that we can educate to take care of the teeth, though we all feel a hesitancy in advising. When we come down to a more uniform practice then I think we can begin to instruct our patients with some understanding. I might advise one thing; another dentist might advise just the opposite to that, and consequently patients become confused. But the better class of people we can instruct. Until we overcome that one great point I think we are working in the dark in advising our patients too far.

Value of the Fell Method of Forced Respiration as a Safeguard in Anesthesia.*

BY GEO. E. FELL, F.R.M.S., BUFFALO, N. Y.

I WAS noticing the number of people in this room a short time ago, and it gave me a little satisfaction to know that I had been instrumental in saving more human lives than there were people in this room at any single time since I arrived. I mean by this that these lives that have been saved could not have been unless a similar method to that which I instituted was used. And it is some satisfaction to myself to be able to stand before you and say this. I feel that I have done something for humanity and am entitled to that credit. It is a satisfaction to do a good thing, and after I have detailed some of the work that has been done by this method you will agree with me.

The first attempt I made to save life by this method was July 23rd, 1887. The subject was a human being and fortunately the operation resulted successfully.

I was called to see a man a few doors from my place at midnight. I used every method I could at that time to save his life. But it was of no use, and I told his wife that he was doomed. It happened that I had the apparatus used in vivisection at my house, and I thought to myself as I saw that man dying—now I have an opportunity to try my scheme and see what I can do. The doctor who was with me promised to support me. Well, after we placed the tube in the neck, the man had no pulse at the wrist, and we could hear but a faint movement of the heart.

* Abstract of paper read at Lake Erie Dental Society, Cambridge, Pa., May, 1896.

We worked away awhile and the pulse became strong, and bye-and-bye the man opened his eyes and stared around. It was a good deal like raising an individual from the dead, but we were so busy we did not have time to be disturbed by that thought. My tube for the neck was so small it was a wonder I did not lose that case, but fortunately in about three hours we found it could be removed. He made a very slow recovery, but a good one. Now in that operation I ascertained the difficulties I had to contend with and set to work and devised an apparatus I thought would do for men. I had to have a larger tube and a great many other things to do this.

Another case I will cite, was where a man had taken 2 oz. of laudanum. When this case came I did not know at that time but what my operation was useless. Physicians said you can do just as well with the old method of artificial respiration and accomplish as much as you can by any other method. Now I have proven that to be wholly false, and furthermore when I made this operation the medical world had accepted the assertion that you must use no bellows or any forcing instrument. They demonstrated these methods were useless, but they had not studied this as they should have done. I devised this instrument, and my second case came and I used artificial respiration for a time but found the man was dying, and then I resorted to my own method, and after 14 hours' respiratory work we saved his life.

A third case was where a man had taken 2 oz. of laudanum, cut his throat and arm and wanted undoubtedly to kill himself. In cutting his throat he had fortunately for himself not cut in a fatal spot. I worked with that man 21 hours steadily before he could breathe for himself.

Now I will read to you an interesting case, for the facts of which I am indebted to Dr. Low, of Buffalo.

Report of case of nitrous oxid narcosis, threatening to result fatally, but resuscitated by the use of the Fell forced respiration apparatus. Occurred July 31st, 1894.

Patient Mrs. G., nationality Irish, age 26, occupation trained nurse. Anesthetized for extraction of right inferior dens sapientiae. The gas was exhibited to the amount of six or seven gallons. No unusual pallor noticed during inhalation. Pupillary reflexes indicating complete anesthesia; the tooth was extracted. Patient sat quietly in operation chair, apparently able to recom-

mence respiration, and inasmuch as it is my habit to allow a moment to intervene after extraction, before attempting to arouse one to consciousness, no alarm was felt at first. When I attempted to arouse her, however, it was found to be impossible. I then unhooked her corsets and cut all waist-bands, and attempted to induce respiration by telescoping the short ribs then suddenly letting go. Previously, during eighteen years experience with nitrous oxid, this method had always resulted in the re-establishment of normal respiration. After several attempts of this character had proved unavailing I dispatched my assistant for my neighbor, Dr. Chas. Butler, who practiced dentistry in the same building, and told her that after summoning him she should go to the nearest telephone station and call an ambulance, with the request that the hospital surgeon should bring with him "The Fell Forced Artificial Respiration Apparatus."

Dr. Butler came immediately to my assistance, but before he arrived I had opened the mouth and drawn the tongue well forward to open air passages, and had again attempted several times to start respiration by telescoping the short ribs. Upon his arrival the patient was placed on her back on the floor, a pillow first being placed under her shoulders and artificial respiration was begun—Sylvester method. Some slight amount of air must have been forced into the air passages, inasmuch as the patient did not become cyanosed, but still no voluntary respiratory effort could be induced, and Dr. Butler discovered that the radical pulse had become very indistinct. Applying his ear to the region of the heart, he reported its action as being both very feeble and irregular. I resorted immediately to hypodermic injections in the arm; brandy 13 to 20. The heart's action was soon observed to be somewhat improved, but the patient appeared to become if anything more cyanosed in spite of our efforts at artificial respiration.

Upon arrival of the ambulance surgeon, perhaps fifteen or twenty minutes had elapsed since the case had become alarming. The Fell apparatus was immediately brought into use, and hypodermic injections of digitalis and strychnia were administered.

I was not present when it was finally discovered that the patient could breathe for herself, but judge that it must have been nearly or quite thirty minutes after the arrival of the ambulance surgeon. Patient was now removed to the hospital, where

I visited her an hour later and found her convalescent. She was able to be about her duties in the afternoon of the same day, though feeling very much out of joint as she afterwards told me, probably the result of my heroic effort before the arrival of the ambulance surgeon.

I have recently learned that the patient reported in the above case had during the early morning hours of the day of operation resorted to hypodermic injections of morphin at different times, in all amounting to $\frac{3}{4}$ gr. This for the purpose of allaying the intense pain which she was suffering, not only in the offending tooth, but still more intense about the regions of that side of her head.

Now I want to detail to you a case, a most remarkable one, in which this apparatus was used for four days and three nights before it could be given up and the patient let breathe for himself. It has surpassed all other cases, and will demonstrate to you more forcibly than the ones I have mentioned before, the value of this work.

The case of Dr. Henry J. Williams.

This young man, Williams, was studying medicine and collecting letters at night for the post office department, so that he was kept pretty hard at work. It was about the time he was preparing for an examination and he had been up five days and five nights according to his own statement. He had fallen into the habit of taking doses of nux vomica to brace him up. This time he went home and instead of using nux vomica, he began to use hypodermic injections of strychnia, in $\frac{1}{80}$ gr. doses, and not feeling its effects as quickly as he thought he ought to, he gave himself two more doses. Then he began to feel the effects of the poison. But he was not at all alarmed. Now he thought, I will just use a good antidote and that will overcome the effects of the strychnin. So he gave himself one fourth grain doses of the antidote. He could not remember how many he took. He was fast losing control of his faculties, and subsequently stated that he had the dreamy recollection of keeping up the administering of the morphia hypodermically until he became unconscious. There is thus no certain evidence of the amount of morphia and atropia administered. It was about 2 a. m. when the last drug was administered, and about 7 o'clock next morning when his father discovered him on the bathroom floor, unconscious and cyanosed. A part of a broken vial lay on the floor.

Physicians were summoned and proceeded to perform Sylvester's method of artificial respiration, which was beneficial in a degree, as it held the life of the patient until my arrival at 8.30.

Tuesday, July 3rd, 1894. First day: patient unconscious. absence of reflexes, cyanotic; pulse at wrist weak, with difficulty to be detected, and an occasional gasping respiratory effort was made. I immediately applied forced respiration, with the face mask, then I felt that the case was sufficiently desperate to warrant the making of the operation of tracheotomy, which was immediately done. Hemorrhage persisted so that it was 9 a. m. before the forced respiration was systematically under way. In a short time the pulse improved at the wrist, but the cyanosis passed slowly away.

11 A. M. After two hours of forced respiration patient opened his eyes, and in a startled manner asked, "What is the matter?" And he was in a more or less semi-conscious condition from that on. The desperate condition of the case evidenced in the unusually slow response to the efforts being made. It was thought best to supply oxygen gas with the forced respirations. A supply was obtained and connected with the oxygen tube of the apparatus. It was used throughout the case, but it was found that the oxygen alone was not sufficient to retain the life of the patient.

During the whole of Tuesday afternoon and night the apparatus was in continual operation.

Second day, Wednesday. At 11 a. m. I removed the tracheotomy tube from the neck, expecting that the auto-respirations would ensue, and that with the aid of the oxygen gas continuously administered the patient would be enabled to exist without the aid of the respiration apparatus. We had been continuously at work with him for 26 hours, and I thought now I could get away, so I left. On arrival at my office I was summoned back with the unpleasant news that the patient was breathing with great difficulty and had become cyanotic. I found that he had relapsed considerable. I replaced the tracheotomy tube in the neck and again renewed the forced respiration with varying proportions of oxygen gas, and kept it under way continually until 9 a. m. July 5th, or the second long-continued period of forced respiration, viz., 21 hours.

At the beginning of this second long continued respiratory effort the temperature in the mouth registered $104\frac{1}{2}^{\circ}$ Fah. At its close it had been reduced to 101° , or a reduction of three and one-half deg. Nothing in the line of antipyretic medication had been utilized, and the decrease in temperature had not taken place under the administration of the oxygen gas. Or in other words, all agents used were of no avail without the mechanical respiration; and that it alone was the necessary factor in the saving of the life of the patient. That owing to the perfectness of the method, its similarity in influence to physiological respiration, its tendency was toward the toning-up of the system, and the overcoming of the abnormal condition existing. This speaks volumes for the perfect working of the simple apparatus; the complete and instantaneous control the physician has over the character of the inspiration, having it in his power to shorten or lengthen an inspiration or expiration; to change instantly from one to the other, and thus aid the auto-respiratory effort when attempted on the part of the patient. This is effected by the arrangement of the air-control valve, which is simple and yet does its work entirely at the control of the manipulator. Other methods recommended will not accomplish this so readily.

Third day. On the third day we said to ourselves, if he is ever going to breathe alone he must do it now. We supplied him with gas and yet at the end of that time we thought there was no possible hope for him at all. Many of the doctors present ridiculed the idea of saving the patient. The pulse became weak, thread-like and frequent, so that continued hypodermic treatment, with brandy and caffeine and rectal alimentation, became necessary to sustain the fagged-out system.

7.30 P. M. July 5th. Forced respiration was again resorted to as it had been conclusively proven in this as in many other cases to be the only agent which appeared to be a positive necessity as a life sustainer. I made up my mind to keep on breathing for him for a week if need be, so we started again and began breathing for him. I would state that we had a number of people to help us. We kept it up until Friday, using hypodermic injections for hours. Friday afternoon we tried this experiment. We would breathe for him five minutes at a time and then tell him to breathe for himself. He could not keep up his own respiration for a minute, so we had to keep it up for him. It was very

fatiguing for the patient to make these efforts to breathe for himself, and he would hail with satisfaction the relief afforded by the forced respiration, being perfectly conscious he could not, with all his energy, keep up auto-respiration.

By-and-by, in the evening on Friday, he began to find fault with the apparatus; the intruding of air into the trachea appeared to bother him. The fact, however, began to dawn upon us that he was becoming in condition to breathe for himself, and about 10 o'clock Friday night we took the tube out of his neck, and gladly relinquished to Dr. Williams his undoubted right to do his own respiratory work.

The total time the apparatus was in constant use was nearly 80 hours.

Dr. Williams is now living and practicing medicine in New York. There was no question of suicide in his case.

Now artificial respiration we may look upon as a method of Sylvester's. But when we come to forced respiration, we apply that term to all methods by which we use mechanical means.

DISCUSSION.

DR. ANDERSON asks in a case where a man had been given an anesthetic and held in a position that the blood has run into the lungs and strangled him, what would be the result by using this method?

DR. AMBLER asks what provision Dr. Fell makes when he applies the face mask for the passage of air, whether he intends to pass it through the nose or the mouth?

DR. HIVELY asks whether he could not have a larger bellows, that would do business without so much effort?

DR. —: Can this face mask be held sufficiently tight over the face without any escape of air?

DR. FLOWER: Have you ever used it in case where a person had been placed under water for a certain length of time, and respiration ceased?

DR. BRATT: I would like to know to what diseases it could be applied—Such as membranous croup, and the like?

DR. FELL took all these questions as a total and answered them about as follows: In answer to the first question, he said, In an operation upon J. Barre there was considerable blood in the lungs, and you could hear the blood gurgling ten feet away.

In a case of that kind all that would be necessary would be to invert your patient and the fluid in the lungs would run out. A large amount of fluid can be in the lungs without interfering with the respiratory efforts.

What you would do in a case of drowning would be to place your face mask upon the patient and invert him, and the air may pass in by way of the mouth or nose. If you have the patient on his back you will find very little difficulty in the air passing to his lungs. Ordinarily I have no trouble.

Now as to the question of a large bellows—there would be no objection if you knew you were going to always work upon an adult. Another advantage—these bellows are so small they can be carried around readily. The idea is to supply the air; it does not matter much what kind of a bellows you have, although this is a most convenient size. If you are breathing for a child a year old, you can use it as well as for an adult. The movements of the bellows controls the time for inspiration and expiration.

Now as to the question of diseases. A physician said to me that he used this apparatus to improve some patients, tone them up and get them ready for an operation, when they were unusually weak. In another case an old gentleman came into my office breathing with the greatest difficulty. He was asthmatic and could hardly catch a breath. I breathed him for awhile, and he said afterwards he had not breathed so well in a month. This apparatus enabled him to get enough oxygen for his blood. But after we stopped breathing for him that was the end of the cure, of course, and so I think if I was going to start an asthmatic institute I would have a number of these apparatus, so that each person could breath for himself.

One day an old lady took a bottle of what she thought was medicine and drank it. I was called to see her, but the shock and condition of her stomach was such that there was no hope. However, they wanted to preserve her life for a little while, and I used the face mask, and kept her living for twenty-four hours longer. In extreme cases there is no question but that this will save life where you could not have saved it by any other means.

In the question of the escape of air. In ordinary cases the face mask fits somewhat tightly. In cases where the mask does not fit tightly; I just put a handkerchief around and press it down.

DR. A. C. ALPIN: I think if any dentist here wants to be a benefactor to his community, he would do well to supply himself with this apparatus, as in every town there is some fatality which might be obviated with some such apparatus as this. There is, also, some satisfaction in having one of these in our offices. Their value would be incalculable. I feel deep gratitude to Dr. Fell for so kindly coming here.

ALL SORTS.

Consider the Feelings of Patients.

In the report of society proceedings in the *Stomatological Gazette*, Dr. Knapp states that:—

"No unnecessary pain should be inflicted on the patients. The dentist is intent on his work, and he is thinking of it, and not of the feelings of his patient. I believe that a great many increase their practice, simply because of the fact that they are careful of the comfort of their patients. I believe in the use of all labor-saving, time-saving, and pain-saving machinery that we can get hold of; anything that saves time, pain or labor is money in our pockets, because it is conducive to the patient's comfort. To make our office attractive is money in our pockets. A good lady assistant adds to the comfort and convenience of lady patients, and then they stay longer than boys. Be a gentleman under all circumstances, and keep your temper. Serve the true interests of the patient. In the long run it builds up the character of the office more than anything else, and you will create a reputation for yourself that is worth having. It not only does that, but creates in you a desire for better things. You have got to keep up with all the latest knowledge and everything like that. The money-making part of the profession is, comparatively speaking, degrading. What should be our idea is to do our patients all the good we can, and serve their true interests; it helps us to do good in the world to others besides ourselves. Don't try to do all the practice there is to be done in the city or county. Save your lives a little longer. Save the tempers of the young men and keep your own in good condition. When your practice is such you can't do it in one day, raise the price for it. A man can't have engagements during the whole day and work under that kind of pressure and do good work. People don't like to be hurried in that way. Above all things, have your office cleanly, and be clean yourself."

Natural Enamel Inlay.

Dr. A. H. Wallace contributes an article to the *Stomatological Gazette* from which we take the following abstract:—

“I commenced the practice of placing natural enamel three years ago, getting the idea at that time from some work by Dr. Younger, and have been performing the operation more or less since without a failure.

Many skeptics will question the durability of such work, and cite the decay of the enamel, the washing away of the cement, and the breaking away of the inlay from its anchorage as objections. The first of these objections is very well taken, for the enamel is liable to decay; but if it should decay in three to five years (and I say this would be a good limit to healthy enamel), take it out and put in another piece, and the patient will be well repaid for the years he has been exempt from the glare of gold. The other objection—the washing away of the cement—cannot be considered as such, as there is no cement to wash away in a properly fitted inlay; and if there is, watch it, and have it replaced before the decay commences. The last objection, breaking away from its anchorage, is liable to occur if we use poor cement and are careless in its mixing and setting; but this will never occur in proximal cavities where the cutting edge is not involved. In cases where the cutting edge is involved to the extent of one-half or one-third of the tooth, resort to a gold pin for better anchorage.

An inlay is applicable to four kinds of cavities: proximal cavity in the front teeth, with or without involvement of the cutting edge, in labial and buccal cavities. When the cutting edge is not involved, and inlay well fitted it will last a lifetime. When the cutting edge is involved the case becomes of a most serious character, and inlay depends wholly on the anchorage for its stability. In this event, I make the inlay as large as possible, without cutting away too much of the tooth, and make a perceptible shoulder at the cervical boundary.

On the labial surface, when properly fitted, the inlay will last longer than gold. In a case where I have restoration of one-half or one-third of a tooth, I depend on one or two gold pins for anchorage, and the placing of a whole natural tooth-crown on the front teeth is very effective.

The advantages I claim for this are: *first*, the natural color assumed from three days to two weeks after the operation, the same as implanted teeth; *second*, the natural contour of the tooth restored; *third*, strength, non-friability; *fourth*, the artistic value when properly done.

The methods I sometimes use to obtain these results are, *first*, rotation of the tooth with ligature (Younger's method) so as to bring the mesial surface to the front, spreading the teeth with cotton tape; porcelain

inlays in small cavities; and, if tooth is dead or discolored, bleaching to normal color with pyrozone.

In selecting a tooth to cut inlay from, care should be taken to get a tooth as near the size and shape of the one to be operated upon. This can be determined by the aid of calipers. After selecting the tooth, give it a bath of iodine to cleanse it and then let it remain in a solution of bichlorid of mercury (1 in 2000) for twelve hours. The modus operandi after this is to grind with fine stone to approximately the size, then mount it with shellac to an instrument so as to give access to cavity.

A perfect fit can be obtained by smearing the cavity with rouge and oil, and by placing the inlay in it, grinding away a little of the inlay at a time just where it comes in contact with enamel walls. After it is fitted wash out cavity with soap and warm water to remove oil, then thoroughly dry and, using best cement, cement in place, care being taken not to displace inlay after it has begun to set. Trim off so as inlay will not strike antagonizing teeth, and you will have a filling that will last as long as gold, and will be a pleasure to yourself and patient."

Die and Counter-Die Fusible Metal.

| | | | | | | | | | |
|---------|---|---|---|---|---|---|---|---|-----------|
| Tin | - | - | - | - | - | - | - | - | 4 parts. |
| Lead | - | - | - | - | - | - | - | - | 3 parts. |
| Bismuth | - | - | - | - | - | - | - | - | 15 parts. |
| Cadmium | - | - | - | - | - | - | - | - | 3 parts. |

Fusible at 150 deg., F.

—DR. CLYDE PAYNE in *Stomatological Gazette*.

Artificial Dentures.

Young practitioners in dentistry are always exceedingly anxious concerning the fit or adaptation of their first artificial dentures, and when they do not prove to be satisfactory and are too easily displaced in practical use, the failure is ascribed to a lack of adaptation, another impression is taken and the plates remade. We have in previous numbers of this journal called attention to the great probability that the lack of success in many cases is due to mal-occlusion, rather than to a poor fit. An upper plate is inserted in a mouth in which there are but the anterior lower teeth. No special provisions are made to secure a direct occlusion, but the natural lower teeth are made to close against the lingual side of the artificial teeth, or the sloping surface of the plate. Of course such an

inclined plane must force the denture forward until adhesion is lost, when it falls in the mouth.

If there are natural bicuspid and molars below, the artificial teeth may be so adjusted that they slide upon some projecting point, or the inclined surface of a natural tooth, and any force that is then used in mastication has the natural tendency to drive the denture out of its place, either posteriorly or anteriorly. Perhaps there is an inclined plane on both sides, and the plate with a direct adhesive force of five or six pounds, is expected to retain its place against an oblique energy of thirty or forty pounds.

Every dentist knows that in the natural denture no tooth falls into line exactly opposite the another, but rather "breaks joints" with it, the first lower pre-molar shutting between the upper cuspid and the first upper pre-molar, this arrangement being preserved throughout. Each tooth in that case is prevented from sliding upon its antagonist, and is firmly held without effort. If cuspids or premolars were to occlude point to point, there would not be force enough in the jaws to prevent them from sliding either one way or the other. Therefore, in arranging artificial teeth, especial care should be taken to see that there are no inclined planes of occlusion, or if one is found to be unavoidable, another in the opposite direction should be arranged to counteract it.

An artificial tooth should never be arranged to bite directly upon another. That is, their vertical axes should never be in line. Perfect occlusion is impossible when this is the case, and their occluding surfaces must either be ground down flat, or they will slide forward or backward. Each tooth must bite upon two opposite ones. The cusps are so fashioned that they naturally fall into place between the opposite teeth, and thus interlock in a manner that prevents sliding when they are in contact.

Sometimes it is difficult to arrange this when artificial teeth occlude with natural ones, but it can always be secured either by changing the arch of the artificial teeth, by leaving a space between them, or by carrying the centre a little to one side. Of course when gum section teeth are used, the spaces between them cannot be changed at will, and that is why good mastication can not be as well secured with them as with single plain teeth. But the arch or centre can be so changed as to make occlusion comparatively good.

Another reason why artificial dentures are sometimes failures, is that the parts representing the alveolus present to the muscles a convex instead of a plain or concave surface. When the lip must fall over a rounded contour, the natural tendency of both the longitudinal and transverse fibres of the orbicularis oris muscle and those of the others

which blend with it, is to force the plate down. Let the surface of the plate that is under the lip be flat, the upper border not being filed or ground down to a knife edge.

The same rule should be followed in shaping the surfaces against which the lateral borders of the tongue rest. They should even be concave, that the tongue may lie easily in the space, and assist in holding the denture in place. Much of the difficulty in speaking that sometimes follows the insertion of artificial teeth, is due to the unnecessary thickness of the plate at the points representing the lingual alveolus over the roots of pre-molars and molars. In making rubber plates, too much material is used where it is not needed for strength, and the plate is thus rendered heavy, clumsy, inartistic and difficult of retention.

Many dentists especially those who are young in practice, wax their rubber cases too far toward the points of plain teeth. Those that are just about long enough to reach to the alveolar ridge should be selected, and then upon their labial aspect they should be waxed only high enough barely to engage their external base. It is much easier to finish them, they look far more artistic, and they are lighter. The incisive and canine fossæ should be well marked, to afford a proper lodging place for the decussating fibres of the buccinator, and for the longitudinal fibres of the levator muscles. The margin in these regions must be cut down, while the canine eminence is marked by carrying it higher in that locality. When these rules are observed the plate will not only be more artistic in appearance, but it will be retained in position much more easily."—*Editorial in Dental Practitioner and Advertiser.*

Very Rapid Decay.

At the Odontological Society of Great Britain, a report of which appears in the *Dental Record*, "Mr. J. F. Colyer spoke of an example of very rapid decay in a comparatively young child. The patient was in attendance. She was about eight years old when she first came under his observation, and at that time the upper central incisors were very badly attacked about half way down. The four lower incisors were decaying very badly, and her temporary molars were also in a similar condition, being practically level with the gum; the first permanent molars too were carious. The decay was of so very soft a character that it seemed almost hopeless to do anything for the patient, but the following treatment was adopted with apparent success. Once a week for the first month, the teeth were given a coating of nitrate of silver, whilst at the same time he suggested to the mother that twice a day the teeth

should be dried and spirits of wine applied to the surface, keeping the mouth open for two or three minutes if possible, in order that the spirit might evaporate, and by that means harden the dentine. He saw the child every two months, and applied a fresh coating of nitrate of silver. The result had been very satisfactory. The objection that nitrate of silver turned the teeth black, though equally true with regard to the temporary teeth, had not the same force as with respect to the permanent ones."

Removal of Pulps—An Immediate and Nearly Painless Method.

From an article by Dr. F. J. Fesler, in the *Dental Digest*, we quote the method given, as follows:

"Go to your druggist and ask him to make a solution of muriate of cocain in this way. Take a test-tube in which ten grains of muriate of cocain have been placed, and add one drachm of distilled water, then bring to a boil, cool and place in a vial for use. You can do this in your own office if you choose. Now when occasion presents itself, put the rubber dam over the tooth to be operated upon and tie it, or in some way make it so tight that none of the solution will go through into the mouth or on the gum, and I think a clamp is the most reliable to prevent displacement by any sudden movement of the patient. If the pulp be alive and not exposed, so that it cannot be readily reached with a hypodermic needle, take a small drill, the same size as the needle, and open just to the pulp. Then take into your syringe a quantity of the cocain solution and place one or two drops in the cavity in such a way as to numb the pulp to the entrance of the needle. This can usually be accomplished in one or two minutes, so that but a very little pain will be felt on entering the needle, say a thirty-second of an inch into the pulp. This may also be accomplished by touching the exposed pulp with a 95 per cent. solution of carbolic acid.

"Now after entering the needle use gentle pressure, injecting the solution and pushing the needle further into the pulp as fast as sensation is lost. The whole operation of anesthetization may be completed in from three to five minutes, so that a hook broach can be carried to the end of pulp-canal and turned around, thus amputating the pulp, to be afterwards removed with a barbed broach, by a broach wound with cotton, or in any way you may see fit. Any hemorrhage may be stopped with carbolic acid.

"I am in the habit of filling my hypodermic syringe, then place it in position, the needle point just at the entrance to the canal, and while it is held in that position place enough of Gilbert's temporary stopping,

which has been previously warmed, around it to fill the cavity. This is applicable to those cases where the nerve is partly alive, receded, or the cavity is so large as to allow much of the liquid to flow back and so not enter the pulp. It will be found necessary where the pulp extends to two or more roots, so that enough pressure from the syringe may be exerted to force the solution throughout them all, or each root may be treated separately. Each case will present conditions requiring slight differences in manipulation which will readily suggest themselves. The operator should always use care if he has any cuts or abrasions on his hands that the solution does not get into them, and the hands should be immediately washed if free from cuts."

An Important Factor in Cataphoric Medication.

In a discussion on this subject published in the *International*, Dr. F. T. Van Woert says: "One of the most important factors in cataphoric medication is the proper conductivity of the medicament used. Professor Morton has recommended the use of guaiacol in connection with cocain. Guaiacol I find, like all of the oils or fats, is an absolute non-conductor, and unless sulfuric acid or some chemical having high conductive properties is added, it would be of little use. I find in my practice the best results are obtained from an aqueous solution,—thirty per cent.,—or a saturated solution, of cocain, with a very slight trace of chlorid of sodium."

Useful Hints.

Dr. H. H. Sullivan gives the following in the *Items of Interest* :

TO SHARPEN PIANO WIRE BROACHES.—After filing down in the usual way, place on your mandrel one coarse emery disk and one fine one with the grits facing each other; adjust mandrel in hand-piece to your engine, now hold the wire to be smoothed down to as fine a point as desired between the disks, and run engine at moderate speed, turning the wire from right to left that it will be true when finished.

ROOT CANAL CLEANERS.—Take Donaldson's canal cleansers No. 5. After you have broken off the barbed portion and they appear to be worthless, smooth the end nearest the barbed portion and insert them in small wooden handles. You will find them exceedingly useful; having a fine temper they can be bent in any desired shape. Now dip them in a little sandarac varnish and wipe all excess of varnish off. Now wind a

wisp of cotton around them, and they will carry any medicine to any portion of the root of a diseased tooth.

Do not wind enough cotton to fill the root tightly when using in the pumping process, especially when using peroxid of hydrogen for cleansing abscessed teeth.

The handles mentioned I make from pins secured at the butcher shop used to pin roasts with. Cut them off proper length, sandpaper and shellac them. I always put a small brass ferrule on the end nearest broach, polish it and then shellac, this gives the instrument strength and adds materially to the appearance. I also find these instruments useful in filling small canals and examining teeth for small cavities.

HANDLES FOR BENCH FILES.—I use ordinary corks; they are light and answer all purposes.

CEMENT SPATULA.—Take an artist's pallet knife with a three inch-blade, and cut it off so it will be one and seven-eighths inch-blade, and you will have an ideal spatula for cements. With this you can thoroughly incorporate the liquid and powder. I use a piece of plate glass $\frac{1}{4}$ inch thick, 5 by 5 inches, on which to mix cement.

An Uncommon Case.

The following appears in the *Dominion Dental Journal*, having been translated from the *Monatschrift für Zahnheilkunde* :—

“Dr. Daisch writes about a case which is very interesting in reference to its successful treatment, and especially its etiology. A girl thirteen years of age presented herself at the office on the 23rd of June with a swelling on her lower jaw, left side. The first molar and first bicuspid were quite healthy. The second premolar also appeared to be sound, but as this was the last of the temporary teeth, it was extracted in the hope of reducing the swelling and giving the second bicuspid an opportunity to erupt. The roots of the temporary tooth were only slightly resorbed. As some pus came out of the alveolus after the extraction, a poultice was applied for a few days. The girl did not come back till after several weeks. The poultice had been used, as there was still pus which had a very disagreeable odor. On the 13th of August she was sent to the hospital, and on the following day she was put under the influence of chloroform to find and remove the second bicupid. The swelling was about the size of a hen's egg, into which an incision was cut from the first molar to the first bicuspid. A large quantity of disagreeable pus flowed from the cut. After much probing the

tooth was found, but the position of the roots could not be determined. All attempts to extract it failed. It was determined to pack the incision with iodoform gauze, and wait for a few days. The tampon was renewed every day after the cavity was syringed with boric acid. On the fourth day it was possible to again find the tooth with a probe. It was now close to the first bicuspid, and not far from the opening. Unfortunately in probing it was pushed back to its original place, from which it could not be removed. On the following day, on removing the tampon, it was again found close to the opening, and, with care, was removed with an elevator. Patient remained in the hospital three weeks, during which time the wound was treated daily with kali permangan, or boric acid and iodoform gauze. From what could be learned from the girl, the malady was caused by a fall down a flight of stairs some four years previous. A few days after this accident the premolar became very sensitive, and mastication was difficult, but she did not complain nor consult a physician until it took this aggravated and painful form, when she consulted Dr. Daish. In examining the extracted bicuspid he came to the conclusion that in falling a blow or pressure was exerted on the developing root which injured the pulp and caused it to die before it was fully developed."

A Word of Caution.

A short time ago, when using cataphoresis for obtunding sensitive dentine, I had a rather unpleasant experience; and I give it here as a caution, that others may not have a like experience.

I was preparing a buccal cavity in the right inferior second molar, which was extremely sensitive. The patient, a lady, held the electrode in her left hand. I was not able to use above fifteen volts. After applying it for fifteen minutes, the cavity still sensitive, I continued the application ten minutes longer, and was then able to excavate without causing any pain. After the operation, the patient remarked she was having a severe pain in her finger, and removed her wedding ring. To her surprise and my mortification, there was quite a blister on the back of the finger. She said she felt a slight burning sensation under the ring all the time during the application, but did not think it necessary to call my attention to it.

Since using this method, this is the longest time required for the application. Possibly the action under the ring retarded the action in the tooth. I am now careful to see that there are no rings on the hand in which the electrode is held.—GEO. A. MAXFIELD in *Cosmos*.

Formulæ.

The following appeared in the *Stomatological Gazette* :

TOOTH-POWDER FORMULA.—Dr. H. R. Morton, Sr., recently presented to the Stomatological Club the following formula for a tooth-powder of his own composition, which he claims is non-injurious to the enamel :

| | | | | | | |
|---|------------------|---|---|---|---|-------|
| R | Precip. chalk | - | - | - | - | 6 oz. |
| | Pulv. cast. soap | - | - | - | - | 2 oz. |
| | Pulv. borax | - | - | - | - | 2 oz. |

M. Add perfume and sugar to sweeten.

FORMULA FOR FINE GOLD.—Dr. Max Sichel has presented to the Stomatological Club the following method of making fine gold, which, it is considered, makes the finest working, most compact and cohesive filling gold of any now on the market. Dr. Sichel is so advanced in years that he does not care to manufacture it for sale :

Take fine gold, dissolve in $2\frac{1}{4}$ parts of muriatic acid and one part nitric acid until gold is all dissolved and becomes red like blood tears. After it is cool add distilled water—say, 1 ounce of gold to 12 ounces of water. Set it stand for a week or ten days, when the chlorid of silver will be found on the bottom. Then add oxalic acid until gold is precipitated. Then pour it off and wash well until all the oxalic acid is out. Dry it in a dish, put it in a crucible lined with bone-dust, melt it and then roll.

Liquid Silex.

The solution known by this name, or a soluble glass, chemically the sodium silicate (Na_2SiO_3) is quite as effective a medium to prevent the adhesion of plaster to vulcanite as is tin foil, but certain precautions are necessary to procure the best results. The material should be kept in a moderately warm place, and tightly stoppered. As soon as its viscosity becomes greater than a thin syrup, throw it away and buy a new bottle. Should it lose its perfect clearness, discard it. The writer finds that about one-third of the four-ounce bottles in which it is sold is useful; the remainder is usually so deteriorated as to be worthless. Dilution with hot water and warming the solution restores its appearance, but for dental purposes not its virtues. The model, after investment, and also the teeth and entire investment, are freed of adherent wax by pouring over them a stream of *boiling water*. The excess of water is absorbed by means of bibulous paper. As soon as the wet appearance disappears from the plaster, it is ready to receive the silicate, not before.

A camel's-hair brush, having a fine point and no loose hairs, is dipped in the solution and the surplus wiped off the brush. The plaster surfaces, all of them, are painted lightly with the silex, carefully avoiding contact with the porcelain or platinum pins. By means of the fine point on the brush the matrix of the rim is painted between the teeth; in coating the cap side of the investment, much care is required to prevent touching the teeth. Small wisps of bibulous paper are quickly and gently passed over the painted surfaces until there is a thin glaze covering every part of the plaster. The pieces should be set aside for at least fifteen minutes, to permit thorough hardening of the silex. After vulcanizing, the flasks should not remain unopened over night, for if salt (sodium chlorid) has been used to hasten the setting of the investment, the surface of the vulcanized plate will be covered by a hard and tenacious gloss; if opened as soon as cold the plaster and silex part from the vulcanite, without even washing, leaving a smooth, glazed surface equal to that found under tin foil.

The mechanic may be certain that the lack of good results is due to either carelessness or faulty silex.

This is an important matter, as unquestionably many or most of the ills attributed to the wearing of vulcanite plates are due to roughness upon their palatal surfaces.—H. H. BURCHARD in *Dental Cosmos*.

Scaling of Teeth.

I do not know of any operation requiring more thoroughness than the scaling of the teeth. I notice frequently that operators in removing tartar leave slight secretions. If a particle is left it is sure to form a nucleus for more. I take one tooth at a time and finish it thoroughly. Many operators jump from one tooth to another and overlook small secretions of tartar. I am not much in favor of the application of iodine, although it is a good designator of the location of tartar. Aromatic sulfuric acid can be used on what is known as green tartar, but used cautiously, and alkali should be used immediately after. When the tartar is removed pay particular attention to the gums and bring them to a healthy condition as soon as possible, using an astringent. I generally use tincture of myrrh. If I have a case where the gums bleed profusely I use tannic acid. It has a two-fold object—arresting the flow of blood, and thereby keeping the mouth clean, and assisting in healing the gums if there is any laceration. If there are occasions when you must go deep below the gums you can use some anesthetic.—DR. MORFFEY, in *Stomatological Gazette*.

Root Filling Material.

I want to bring before your notice, that you may yourself experiment with it as a root filling, the combination of *salicylate of soda and carbonate of lead*. The latter of course is a most perfect antiseptic. The way I use it is thus: mix a little of the powdered carbonate of lead with the salicylate of soda, and then apply one drop or so of water, then manipulate as any osteoplastic, you will find after about a minute, you can take it up, roll it into fine points, and it fills nicely into the canals, and sets *very hard*: I have been using it over one year, for the antiseptic properties of carbonate of lead, were forcibly brought to my mind when traveling abroad and visiting the catacombs. *I have never had one case* that has turned out other than satisfactory, and I thought you might bring it before some of your societies, that it might be further tested. To me it seems to be the ideal root canal filling. There is one point I must mention, I found that out of seven different preparations of salicylate of soda, I received from chemists in London only *one*, "Hearon & Squires" would produce the result, viz., a slow to set, tough filling material, that sets as hard as any phosphate filling.—V. DITCHAM in *Dental Review*.

Early Treatment of Crowded Mouths.

In discussing this subject Dr. F. J. Colyer said:—(*Dental Record*.)

"He strongly advocated early treatment, and claimed the advantage that if adopted as soon as it became evident that a crowded mouth at a later period would otherwise inevitably result, the case, when all the teeth were erupted, would simply resolve itself into one of a misplaced canine or bicuspid—a condition comparatively easy to remedy. Whereas, if the case were left untreated, the difficulty of remedial measures would be increased by the fact that the teeth had become more fixed in their irregular position and more teeth had become involved. Having weighed the advantages of extraction in comparison with expansion, Mr. Colyer passed on to consider the treatment of individual examples under the two heads:—(1) Cases where the first permanent molar is unsavable. (2) Cases where the first permanent molar is savable. For the former class he recommended the removal of the temporary canines directly crowding seemed inevitable, by this means enabling the incisors to come into a regular line at the expense of the space left by the removal of the temporary canine. The bicuspid is then able to erupt in the normal way, leaving the mouth fairly regular, with the exception of the small space between the lateral incisor and the first bicuspid, so that the canine erupts external to the arch. The first permanent molars are removed di-

rectly the second permanent are sufficiently through to permit being held in place by a plate. Space having been made for the bicusps, they move back, generally without further mechanical treatment, and the canine falls into place. The extraction of the unerupted first bicuspid was recommended by Mr. Colyer as the most satisfactory method of dealing with cases of the latter class, and, in support of his theoretical contention, he exhibited on the screen, photographs of twelve cases in which this treatment had been adopted, and in most of them with excellent results."

Meditrina, or Electrozone.

The *Australian Medical Gazette*, an excellent journal, by the way, speaks of meditrina, which is a refined preparation of electrozone, as a powerful disinfectant, germicide, and antiseptic. We have used it in the oral cavity for some time, almost to the exclusion of all other disinfectants. But its proper sphere is as a disinfectant only. As a germicide or an antiseptic it acts but secondarily. It decomposes infectious matter, and as it is without toxic properties it is admirably adapted to oral practice. But as a germicide or an antiseptic, it is inferior to a number of other preparations in common use. As a disinfectant it possesses virtues that we have never found in any other preparation.—*Dental Practitioner and Advertiser*.

Eucaïne.

Under this name a new substitute for cocain has been brought out by a Berlin dentist named Kiessel. It is prepared synthetically, and the chemists describe it as "a methyl ester of benzo-yloxypiporidine carbol-oxylic acid." It is claimed for it that it does not affect the heart, produces more extensive anesthesia than cocain, and is non-poisonous. Probably, it will also be much cheaper.—*British Journal*.

Dental Society of Southwestern Michigan.

The Dental Society of Southwestern Michigan will hold its semi-annual meeting at Dowagiac Sept. 8th and 9th, 1896. The executive committee are arranging a very interesting program and a good attendance is expected. A cordial invitation is extended to the profession in this and other States.

St. Joseph, Mich.

E. I. BACKUS, D.D.S., *Sec'y*.

A Few Hints.

The following are taken from *Ash's Quarterly Circular*:

INVESTING MATERIAL.—Mr. Girdler uses the dust of burnt anthracite coal instead of sand or asbestos, in conjunction with plaster, for investing cases for soldering. With this soldering composition he finds that the plaster rarely cracks.

BACKING FLAT (PLATE) TEETH.—To prevent teeth cracking during the process of backing, place a piece of thin tissue paper between the tooth and the backing.

RUBBER-DAM.—Any unpleasant smell that may be present in rubber-dam can be effectually removed by soaking the rubber in cold water for two or three hours.

BITE PLATES.—Mr. John Ellis, Sandown, Isle of Wight, states that impression trays, with the outer rim cut off, make excellent bite plates, and suggests that spoiled or useless impression trays can be utilized for this purpose.

EDITOR'S NOTES.

Items of Interest.

EDITORS of the various American dental journals have expressed themselves regarding the controversy we have been having with the *Items of Interest*. That our readers may see what the general opinion is, we here reproduce some of the comments. Editor J. D. Patterson, of the *Western Dental Journal*, in the issues of April and May, says:

"*Editor Bethel*, of the *Ohio Journal*, is after the curious methods of the editor of the *Items of Interest* in giving—or, rather, *not* giving—credit for clippings from other journals. We are with Dr. Bethel in this fight. Editor Welch tries to justify his course, and his explanation doesn't explain anything except his crass appreciation of right dealing."

"Brother Bethel voices our sentiments. In the past we have had skirmishing with the *Items* upon this and other points; but, after all, it matters little what the *Items of Interest* says, and criticism does not seem to change pilfering proclivities."

"*Another Offensive Habit.*—The *Items of Interest* published, on page 76, February, 1896, issue, a short article upon "The Offensive American Habit" as an original article. The "Western Dental Journal" published the identical article on page 519 of November, 1895, issue, giving credit to the *New York World*, from which it was copied. Verily this Vineland editor has given to us an offensive *editorial* habit."

Editor W. C. Barrett, of the *Dental Practitioner and Advertiser*, in the July issue, says:

"A WELL-DESERVED TROUNCING.—There has been a general uprising all along the line of dental journalism against the methods of the editor of *Items of Interest*. It was commenced by the editor of the *Ohio Dental Journal*, who has not yet learned the futility of the protests against pillaging that others had been making for years. One journal after another has now taken up the matter, until it would seem as if any one with the remnant of a conscience would have it awakened.

We wish to add our testimony in the case, for we believe that decent journalism demands a sharp protest against some of the methods of the editor of *Items of Interest*. He seems most emphatically to belong to that class of objectionable people who strain out a gnat and swallow a camel; who—

Compound for sins they are inclined to
By damning those they have no mind to.

He is too conscientious and pious to endure the smoke of a cigar, or to condone the drinking of a glass of wine at a social banquet, but he has no scruples against appropriating an article that belongs to a brother editor, effacing its trade mark by changing its heading and otherwise disguising it, and then attempting to pass off the spurious coin as original and genuine. There is little use for Christianity of that kind, and in the interests of common candor we suggest to the editor in question the propriety of devoting an occasional one of his monthly goo-goo homilies to the virtues of consistency."

Editor James Truman, of the *International Dental Journal*, gives the following in the June issue:

"A JOURNALISTIC WAR.—The *Ohio Dental Journal* has been for some time endeavoring to correct the bad habit of a prominent trade journal for the offence of quoting without proper credit.

This is such an old affair that we have long since ceased to notice it or to expect anything better.

Our objection to the course pursued by the *Items of Interest*—the journal especially condemned—is not so much a loose way of crediting, but the unjust method adopted in that journal of dividing an article into fractional parts and publishing as though these were distinct papers. This no editor is justified in doing, as it is a positive wrong done the author. If a journal must take its matter from other journals, let it be with justice to all concerned.

Trade has very devious methods, and it cannot be expected that the morality of any trade journal will rise any higher than the source of its power.”

Editor J. Edw. Line, of the *Odontographic Journal*, publishes the following in the April issue :

“AT IT AGAIN.—And yet not again, but all the time. The *Ohio Dental Journal* pays its respects to *Items of Interest* for the wholesale steal from its pages of matter that cost valuable time, therefore money, to properly shape for publication, the giving of credit for which the pilferer persistently ignores. We quote *Items of Interest* so seldom that we really know very little of the extent of its misdoing; but if the half said is true, there’s mighty little of interest in it that is not taken directly from other sources, the right and proper thing if only duly credited to the periodical first producing it.”

Editor E. C. Kirk, of the *Dental Cosmos*, expresses himself regarding such methods, as follows :

“I regard ideas published, or otherwise, as commodities in which their originators have vested rights of ownership, which should be as fully respected as the ownership of material things, and I have no more respect for the literary pirate than I have for any other man who appropriates what is not his own.”

Editor T. F. Chupein publishes the following in the July *Dental Office and Laboratory* :

“JOURNALISTIC PILFERING.—We have only words of denunciation for practices of this kind.

We are aware that in the hurry to prepare matter for a coming issue, it will sometimes occur that no acknowledgment

will be made or such acknowledgment neglected to be given, but when this practice is persevered in, and articles taken from other journals divided and scattered through different pages, giving the idea to the reader that he is obligated to the journal for the valuable contribution he has read, it becomes, to say the least of it, "Journalistic Pilfering." These acknowledgments are the amenities which all editors should observe, and its non-observance denounced.

The editor of the "Items of Interest" has laid himself open to this charge on many occasions and continues in his course. Like other journals we have suffered, so that we do not complain without just cause."

The following is from an editorial in the *Southern Dental Journal* and *Luminary*, June issue:

"Speaking for ourselves, we are on the side of justice, courtesy and right, now and always. It has been customary with the press, through all time and age, to acknowledge the source of matter used. It is a moral, and we presume a legal right, and should be complied with. We do not think Dr. Welch would willfully do a dishonorable or unjust act, and we have no doubt that whatever he has done in the direction complained of, has not been from a wrong motive, but has been based upon an honest conception of what constituted his proper right and privilege. Should the concensus of opinion be averse to his position, we believe he will gracefully yield and do the proper thing.

Now that the complaint is made it is the duty of each journal to be more careful and assiduously seek to make proper credit. Occasionally items, by oversight of the printer, may appear uncredited, but when discovered or attention is called to the fact it is simple to make proper amends. We sincerely trust the matter may be satisfactorily adjusted and a courteous agreement arrived at."

We have no desire to continue the controversy, for such things are unpleasant, to say the least. We have pointed out to Dr. Welch where he was in error, and the other journals have substantiated our claims. We hope Dr. Welch is all that the last quoted editorial above pictures him to be and that he will hereafter give due credit to both author and journal for material copied.

We, also, believe that Dr. Welch means to do what is right, for his own words (or we suppose they are his own as no credit is given) in the February, 1896, issue, of the *Items of Interest*, acknowledge it. The article is on page 123, and is as follows:

“ROUGH, BUT RIGHT.—The best and bravest men of earth are those who can and will confess a wrong, when their eyes are opened and they see their error. He is a coward who says “the mule was sixteen feet high,” and then sticks to his mistake. He is an ass—a stubbornly wicked ass.”

Our Dental Colleges.

THAT our dental colleges are prospering is shown by the table that we have prepared, and publish on another page in this issue, of the matriculates and graduates in the colleges belonging to the National Association of Dental Faculties. There were about 6000 students attending the thirty-eight recognized dental colleges during the session of '95 and '96. Of these about 1400 graduated. There are also a number of colleges, not yet members of the Faculty Association, whose graduates this year number from 100 to 150. And from what we can learn at this early date the prospect is excellent for fully as large an attendance at the various colleges the coming year.

SOCIETIES.

American Dental Association.

THE annual meetings of the American Dental Association will be held at Saratoga Springs, N. Y., July 31—Aug. 7, 1896. The regular meetings of the American will begin Tuesday, Aug. 4.

The Grand Union Hotel has been selected as the headquarters and the meetings will be held there. Ample space for committee rooms and exhibits has been secured. The ball-room and club-house, connecting with ball-room, have also been placed at our disposal.

The railroad arrangements have been completed, and the usual fare-and-a-one-third rate of fare secured. Tickets good three days before date of meeting and three days after date of closing. Dentists should pay full fare in going and take a receipt therefor, as it will be impossible to secure the one-third rate in returning unless you hold such receipt.

J. N. CROUSE, Chairman Executive Committee.

College Commencements, 1896.

| | Graduates. | Matriculates |
|--|------------|--------------|
| Philadelphia Dental College | 112 | 409 |
| Pennsylvania College of Dental Surgery | 96 | 342 |
| Ohio College of Dental Surgery | 47 | 215 |
| Kansas City Dental College | 47 | 155 |
| University of Iowa, Dental Dep't | 33 | 218 |
| Baltimore College of Dental Surgery | 44 | 205 |
| Indiana Dental College | 43 | 157 |
| Cleveland University of Medicine and Surgery | 6 | 23 |
| Western Reserve University, Dental Dep't | 7 | 54 |
| Vanderbilt University, Dental Dep't | 27 | 151 |
| Birmingham Dental College | 6 | 42 |
| University of Maryland, Dental Dep't | 42 | 204 |
| Meharry Medical College, Dental Dep't | 3 | 18 |
| Missouri Dental College | 28 | 103 |
| Chicago College of Dental Surgery | 105 | 440 |
| American College of Dental Surgery | 122 | 420 |
| Western Dental College | 44 | 220 |
| Cincinnati College of Dental Surgery | 8 | 38 |
| Columbian University, Dental Department | 14 | 97 |
| Atlanta Dental College | 40 | 202 |
| University of Buffalo, Dental Dep't | 36 | 186 |
| New York College of Dentistry | 74 | 337 |
| National University, Dental Dep't | 6 | 40 |
| University College of Medicine, Dental Dep't | 13 | 36 |
| University of Pennsylvania, Dental Dep't | 74 | 323 |
| Royal College of Dental Surgeons | 28 | 161 |
| University of California, Dental Dep't | 52 | ... |
| University of Tennessee, Dental Dep't | 11 | 54 |
| Northwestern University Dental School | 24 | 127 |
| Louisville College of Dentistry | 32 | 141 |
| Boston Dental College | 36 | 188 |
| Detroit College of Medicine, Dental Dep't | 19 | 70 |
| Northwestern College of Dental Surgery | ... | ... |
| Harvard University, Dental Dep't | 21 | 103 |
| Michigan University, Dental Dep't | 62 | 189 |
| University of Minnesota, Dental Dep't | 14 | 84 |
| Southern Medical College, Dental Dep't | 5 | 52 |
| University of Denver, Dental Dep't | 8 | 28 |
| Total | 1389 | 5832 |

THE OHIO DENTAL JOURNAL.

VOL. XVI.

SEPTEMBER, 1896.

No. 9.

CONTRIBUTIONS.

Incisive Contour Restoration.

BY ROBERT D. M'BRIDE, D.D.S., DETROIT.

ONE of the most perplexing cases that presents itself to the dentist is the restoration of the contour of the incisors where some constitutional malady, during the formation of the teeth, has caused a retarded development of the incisive portion.

As for the preservation and durability, gold is unquestionably the most superior material we have at our command for restoring the contour of the anterior teeth thus affected, but from an esthetic standpoint it is objectionable for invariably it results in a disfigurement. However this is modified by sex. Where we would not hesitate to place gold in the mouth of a man whose mustache causes an inconspicuousness of the teeth, we would extremely regret to mar the appearance of a beautiful young lady by performing such an operation.

Porcelain has proven a failure even in the hands of those who are most skilled in its manipulation and to day is nearly discarded. The great difficulty is its deficiency in strength and inaccuracy in adaptibility. Owing to the shrinkage of porcelain during the fusing process and the liability of fracturing the edge in removing the platinum matrix, it is impossible to complete

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the contour of an incisor without a perceptible line of demarcation, and consequently, it is a matter of but a short time when the cement is washed out and the ravages of decay are observed.

Frequently extreme cases demand the removal of the natural crown and the adjustment of an artificial substitute; but, unless a jacket crown is used, this is limited by the age of the patient. During youth it is essential to preserve the vitality of the tooth that the process of calcification may be completed.

When such an operation is deemed advisable, the following method has proved satisfactory in the hands of the writer:

The anomalous formation of the individual teeth is ground off, finishing with a flat file. A set of Logan crowns the proper form and color, are selected and the pin portion is removed sufficiently so that the remaining incisive portion exactly completes the natural contour of the teeth. The final grinding being done on the side of the wheel, thus producing a most perfect union between the tooth and porcelain tip.

Two anchor screws are placed in each tooth on either side of the pulp and two small holes are drilled in the porcelain with a diamond drill for the reception of the extended portion of the anchor screws.

When the porcelain tips are cemented in place, the line of demarcation is wholly obliterated and the operation presents a clever deception.

Amalgam and its Manipulation.

BY E. J. WAYE, SANDUSKY, O.

THE above is the title of an editorial in the *Dental Digest* for May, by Dr. J. N. Crouse. In it he says, "there is a barrier to success with this material other than in its compounding. This is found in the difficulty of packing it in a perfect manner in the cavity." As the result of numerous experiments made under the most favorable conditions, in steel cups, having parallel sides, and easy of access, with an amalgam "which when tested by a micrometer neither expands nor contracts he could not *always*," he declares, "make a perfect filling."

If in these experiments the instruments used were such as

sold by all dealers, and used by nearly all dentists, having large convex surfaces, either smooth or serrated, the former preferred, as they more readily permit of that peculiar rocking motion which seems to be regarded as an essential to the proper condensation or squeezing of the material into the more inaccessible parts of the cavity, no surprise need to have resulted from his failures.

The writer some time ago discovered, that a perfect amalgam filling could not be made by him, with these instruments, however excellent the quality of the amalgam used, or however great the care taken in packing it. The discovery came about in this way: Having completed a large crown approximal filling in a lower molar, (using a matrix) in the packing of which much pains had been bestowed, and a corresponding pride in the result indulged in, the thought occurred to try what effect a smaller plugger with a different shaped face might show. A chisel shaped instrument having a face at right angles with the handle was used and to my surprise it very readily penetrated to at least one half the depth of the cavity, at the sides, margin, and posterior part of the filling. The only part which had been well condensed being the middle, just where the highest part of the convex surface came in contact with the filling, so as to make a strong pressure.

Subsequent experimentation convinced me that thorough and perfect condensation in all parts of the cavity with pluggers having convex surfaces is very difficult if not impossible. Also that the tendency of a convex surface is to draw the amalgam away from the more inaccessible parts of the cavity, and that an instrument having a flat surface and somewhat smaller than those in use is preferable.

To make a water tight joint, a smooth and even surface against which to pack the amalgam is an important requisite and one which in the past if understood, has in a measure at least been neglected. It certainly had been by the writer as examination under a magnifier fully attested.

Much more care and labor bestowed failed to entirely satisfy my enlightened judgment in this matter, until the expedient was adopted of using a spirit varnish, which, drying quickly, while it filled the tubuli, at the same time left a beautiful smooth surface against which might be packed the amalgam, in a manner

so perfect, as not only to exclude moisture, but thereby prevent oxidization.

Recently Dr. Palmer of Syracuse, N. Y., in giving his own method of making amalgam fillings, explains what had formerly been an enigma, viz, that however carefully prepared the cavity, and however skilfully packed the amalgam, oxydization will result, if the amalgam be brought into contact with dentine, owing to the moisture always present in that material, and which he obviates by filling the tubuli and covering the entire surface with oxy-phosphate mixed quite thin, which hardening quickly leaves an excellent surface against which to pack the amalgam, accomplishing thereby two objects.

One word further as to the material itself.

In the past whatever of failure has resulted from amalgam fillings, was believed to be due to some defect in the material itself. Some lack of a sufficient quantity either of gold or other of the noble metals it should contain, or their proper combination. This belief doubtless contributed greatly to the lack of improvement both in the preparation of the cavity and the introduction of the material.

Indeed it is of comparatively recent date that any great amount of attention has been bestowed upon this very essential part of the operation. Some modern ideas in regard to its importance, together with the discovery by a recent experimenter of an amalgam which he declares "neither expands nor contracts," should, it would seem, give a new impulse in this direction. And with this long sought *diseratum* an accomplished fact, the rest must of necessity in a great measure, depend upon the care with which the operation is performed. With no "scape goat" in the way of a poor amalgam, upon which to cast our own short comings, may we not hope that the time will soon come when amalgam fillings without the accompanying black fissure, or the unseemly discoloration, may be the rule rather than the exception?

Materia Medica and Therapeutics.*

BY J. S. CASSIDY, D.D.S., M.D., COVINGTON, KY.

THE process of cataphoresis has probably been the most interesting new feature of dental therapeutics introduced during the past year. Cataphoric medication, however, has been unconsciously practiced, to a limited extent, for several years, by what was supposed to be merely the effects of the electrolysis of certain drugs in the local treatment of alveolar pyorrhea and other septic conditions pertaining to the teeth.

At the clinics of the dental section of the International Medical Congress, at Washington, in 1887, Dr. W. V. B. Ames exhibited a simple electric appliance for developing active iodine, at the desired point, by the electrolysis of KI. At the same clinic, another gentleman, whose name the writer has forgotten, adopted similar means with a solution of NaCl to bleach darkened teeth. This statement is made merely with a view to the recognition of evolution in this phase of electro-therapeutics, and not for the purpose of diminishing the credit due to Prof. Morton and others for introducing this new osmotic treatment.

The physiological benefits obtained in the majority of cases, through cataphoresis, are accepted facts; but the phenomena involved in their production as yet remain unexplained.

Heretofore the effects of electric currents on compound liquids have been studied only in connection with electrolysis; and the questions might be asked:

Does cataphoresis ever occur free from electrolysis? Yes.

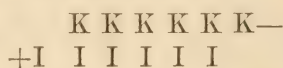
Does electrolysis, of an electrolyte in porous solid or semi-solid matter, always accompany cataphoresis?

To this I would answer No, as witness the passage of water, in moistened clay toward the cathode, without suffering decomposition, and, conversely, the decomposition of KI in contact with gum tissue, where no intromission of the freed iodine is apparent. This latter example seems to prove that at least one of the laws of ordinary electrolysis might be applied with advantage in many cases to our choice of drugs; for instance, those whose decompo-

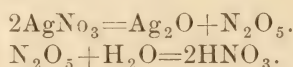
* Report of Sec. V, read before the American Dental Association, Saratoga, N. Y., Aug., 1896.

sition will supply its electro-positive radical as the active agent will penetrate more deeply ; otherwise, as in the case of KI, the electro-negative radical I will not be drawn or pushed cataphorically toward the negative pole ; but when free iodine in aqueous solution is used, it acts most charmingly, owing to the carrying power of the water, absence of chemical action, and consequent non-interference with its passage by a more highly electro-positive radical. The extra energy noticed in bleaching, of electro-negative O developed by this process from aqueous pyrozone, may be accounted for by its greatly increased volume and pressure, due to the electrolysis.

Electro-negative radicals are attracted towards the anode and the positive radicals to the cathode, probably somewhat according to the following arrangement of KI :



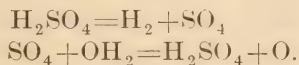
Dr. L. P. Bethel has reported, recently, successful applications of this method in introducing solution of AgNO_3 into root-canals ; the canal in each instance, although too small for any broach to enter, was completely permeated. This statement is not surprising, however, if we consider the nature of the substance. It decomposes into basic and acid radicals by contact with organic matter, even when applied topically ; it is a good electrolyte ; and, therefore, the influence of the electric current causes further progression of the basic radical Ag_2O than would occur did separation not take place. The silver oxide deposits as an insoluble, black, inert residue, and the acid radical of the salt escapes with water as nitric acid :



One other rule of electrolysis may be alluded to in this connection, namely, "decomposition of an electrolyte is in the ratio of its chemical equivalent." Accordingly 9 parts by weight of H_2O , 98 of H_2SO_4 , and 166 of KI will react simultaneously by the influence of the same current.

This rule may enable some one to construct a list of—may I venture to name them?—"Cataphoretics," by combining in certain proportions a too active conductor with a less active one, as in the case of cocain hydrochlorid and guaiacol.

Objections have been made to the use of sulfuric acid by this method, on account of its loss of power by electrolysis. This, however, is not practically true, for although it decomposes into free H and sulfone, it is again reconstructed at the expense of the water present, enabling the nascent molecule to attack the dentine with more than usual energy, at the same time setting O free.



A liquid conductor, more or less above zero, seems to be essential to this process and different preparations of the same active principle are indicated for the variations in treatment. As is already well known, the action of cocain hydrochlorid is more effective in reducing the sensibility of dentine, if it be retarded by a non-conductor, such as some of the phenols, of which guaiacol, thus far, is preferred. But when using this salt as a local anesthetic for soft tissues, a strong aqueous solution would be my own preference.

Dr. Custer uses blotting-paper, saturated with the solution, and of a size corresponding to the area to be anesthetized; he places the pad in position, a silver coin is then interposed between it and the anode, and the current turned on. For soft tissues both voltage and amperage may be increased above that indicated for sensitive dentine, without producing any unpleasant effects.

In preparing for extracting teeth, a forked anode, adjusted by a ball and socket joint, should be used, one prong placed in the cavity of decay, if there be such, with cocain held by cotton wool, and the other point placed well up on the gum in the manner described by Dr. Custer. Dr. Custer further writes: "I am satisfied on the following: cocain, cataphorically applied on the mucous membrane and upon the cuticle as well, is almost, if not quite, as effective as a hypodermatic injection. It also possesses these advantages:

"First. The application itself, if properly conducted, is painless.

"Second. There is less danger, because the drug is diffused, and it is not possible for the full dose to enter into the venous circulation, as may happen when administered by the syringe. (I believe all the cases of sudden collapse by injection are due to the dose being injected into a vein and thereby carried, undiluted, to

the heart and medulla reflexly.) It is when the cocain is mostly entered into the arteries that the anesthesia is best and the danger least.

"Third. The danger of septic inoculation is overcome."

A few weeks ago the attention of the writer was called to the decided acid reaction produced by cataphoresis of cocain hydrochlorid on sensitive dentine. This reaction is due to electrolysis of the salt, the alkaloid proceeding in search of its beloved cathode, while the acid HCl remains at the surface near its own favorite anode. At first this condition suggested the presence of an enemy, but later experiments proved that the relatively small quantity of acid developed can be of no serious consequence to the dentine.

A new remedy has made its appearance recently, bearing the name of eucain, which will probably soon claim a large share of the honors hitherto belonging to cocain, as a local anesthetic. It is an artificial alkaloid, said to be produced by the reaction between, principally, acetone (dimethyl ketone, CH_3COCH_3) and ammonia. The favorite salt is, like that of cocain, the hydrochlorid, which, evaporated from aqueous solution, retains one molecule of water of crystallization, $\text{C}_{19}\text{H}_{27}\text{NO}_4\text{HClH}_2\text{O}$. Eucain hydrochlorid presents the appearance of a white, odorless, crystalline powder, of a bitter quinin-like taste, soluble in water, alcohol, and chloroform. It induces some hyperemia of the mucosæ, rather than anemia, when applied locally, but, nevertheless, it causes well-marked loss of sensibility. As a "Cataphoretic" obtundent of dentine it seems to act favorably, although more experiments will have to be made with it before its virtues in this direction are accepted as satisfactory. From the literature accompanying the sample sent me I learn that eucain is less poisonous than cocain, although their dosages are approximately the same, that lethal doses cause excitation of the central nervous system, convulsions affecting all the muscles, general paralysis, and, finally, death of the animal by respiratory failure. For producing local anesthesia by hypodermatic injection it is advised to make a solution of one (1) part of eucain hydrochlorid to ten (10) parts of sterilized water. Such a solution, it is claimed, remains permanently unchanged, and can be boiled without causing decomposition. In this particular, at least, it has a decided advantage over cocain; it is probably uniform in its action, other

conditions being equal, on account of its immediate derivation from pure chemicals, instead of indirectly from vegetable sources. The claim is made, further, that no evil effects have thus far been reported as sequelæ of hypodermatic injection for the removal of teeth, although the anesthesia, in point of duration and intensity, was fully as satisfactory as that produced by cocain.

While acknowledging that there must be differences in degrees of danger by the use, and sometimes abuse, of different drugs, introduced by the needle, the evidence of experience proves that unpleasant consequences may follow such an operation, even when the most innocent of all substances be the only one employed.

Lining Root-Canals.*

BY L. P. BETHEL, D.D.S., M.D., KENT, O.

IN the treatment of teeth with devitalized pulps, a medication that not only sterilizes the contents of the root canal but leaves behind an antiseptic deposit which prevents the subsequent development of mico-organisms, would be an ideal disinfectant.

With this thought in mind I began a series of experiments, some months ago, taking nitrate of silver for the first agent.

We know how useful this salt has been in the treatment of certain superficial cavities in the teeth of adults and various cavities in the teeth of children, preventing decay as long as the discoloration remains. If in this location, where it is exposed to the varying conditions of the oral fluids, it will prevent subsequent decay for a considerable time, why should it not remain unchanged for a much longer period when sealed within a root-canal and remain, perhaps, as a permanent barrier to the development of germs.

Repeated attempts at pumping it into the canal by means of wooden points, broaches, etc., proved unsatisfactory, for the silver nitrate solution would not go beyond the point of penetration of the broach and the cases most desired to treat were small, branching, or tortuous canals where it was impossible to pass even a broach. By the aid of cataphoresis, however, the silver nitrate

*Abstract of paper read before the American Dental Association, Saratoga, N. Y., Aug., 1896.

was forced beyond where the broach extended, into small canals, etc., as these specimens show. Microscopic examination shows that the nitrate of silver is forced, by means of cataphoresis, to a greater depth into the tubuli of the dentine, more thoroughly sealing them, than when applied to the surface by ordinary mechanical means.

In the preliminary experiments out of the mouth, the silver nitrate was used in connection with various agents such as sulphate of soda, 1% H_2SO_4 , etc., but the silver nitrate being itself a good conductor of electricity it was found most satisfactory when used alone in an aqueous solution, made from distilled water to avoid all organic material. Various strengths were employed from 10% to a saturated solution, those giving the best results being from 40 per cent. to 75 per cent. solution.

The process of application is a simple one: adjust the rubber dam, and if the crown of the tooth needs protection from discoloration, apply a thin coating of melted wax to the interior surface. Next apply the silver nitrate solution to the canal by means of a wooden tooth-pick or other suitably shaped piece of wood, pump it downward into the canal as thoroughly as possible, place electrode into pulp canal opening, then a pellet of cotton, saturated with the nitrate solution, around electrode at the orifice of the canal, and the electricity does the rest.

The electric current turns the cotton first a light green color, which grows darker until almost black, and serves as an indicator. The time of application will vary according to the condition of the root-canal, whether well opened, its size, strength of current, and per cent. solution of the silver nitrate. The higher per cent. solution the better conductor it makes and the quicker it is deposited. From one to five minutes seems to be ample time.

After removing the electrode, cleanse the pulp cavity and canals as well as possible, with dilute ammonia to neutralize the nitric acid set free, and also to hasten the darkening of the nitrate of silver.

In the majority of practical cases I have been using the nitrate after the root canal has been sterilized, although in several cases it was used without previous sterilization, the cavity sealed and no after trouble experienced.

This root-canal lining is not advocated for all teeth; indeed the practitioner must use judgment in its application. It would

not be advisable in the anterior teeth on account of discoloration, or teeth where the foramen is large, as teeth not fully developed and others, on account of forcing it through the apex of root. Just what would result from such an accident I am unable to state from practical experience. I have tried to force the solution through the apex of a normal root, out of the mouth, but in every instance it has penetrated just through the foramen and stopped, due possibly to forming an albuminate when coming in contact with tissues at the end of the root and thus limiting its own action.

The object of these experiments is to find a means of treating root-canals that are too small to admit a broach, those branching or tortuous, those in flat rooted teeth, etc., where it is doubtful about inserting a protecting root filling. If such root-canals are thoroughly lined with the nitrate solution and it penetrates somewhat into the tubuli, as it does, the probability is that there will be no subsequent trouble even though the root filling should be defective. And, indeed, it is a question if root filling would be necessary at all, especially in small canals.

Roots treated by this process out of the mouth, when filed, reveal the outlines of the canals, their restrictions obstructions, and unlooked for branches that probably would not be found in ordinary root treatment and filling and left, perhaps as a harbor for bacteria in which to multiply and cause subsequent trouble.

This is only the beginning of a series of experiments in this direction. What the future may disclose time alone will tell.

DISCUSSION.

DR. ABBOTT, New York, said that cataphoresis takes too much time. He uses chlorid of zinc and fills with oxychlorid. He thought the silver nitrate would permeate the tubules and become a source of danger to the cementum and pericementum.

DR. L. L. BARBER, Toledo, O., said that this treatment had proved satisfactory to him where other means had failed. He cited a case of a lower third molar, abscessed, that had resisted repeated attempts at treatment with various disinfectants, the tooth becoming painful after the dressings had been sealed in. One application of silver nitrate solution cataphoretically, as advocated in the paper, was used, the cavity sealed, and no inconvenience to the patient has been experienced since the operation.

DR. AMBLER, Cleveland, said that while he was experimenting with nitrate under amalgam fillings, Dr. Bethel suggested its use for root-canals and together they made some preliminary experiments. He had since operated on cases in the mouth and no trouble has been experienced. He does not operate on roots having a large foramen, but where the canals are small and it is almost impossible to pass a broach. Cataphoresis drives the medicament deeper into the tubules than when locally applied and this is an advantage. In the root canal operated on with nitrate of silver you have an insoluble compound sealing the tubules and which cannot be penetrated by anything from outside. It is not intended for teeth of children or where the foramen is large. It is not claimed that the use of silver nitrate is new but this particular application of it certainly is. He has used it also with good results under amalgam fillings. There can be no subsequent decay as long as the dark deposit remains. He does not ask any one to use this method if they don't desire to do so, but he has had good results from its use.

DR. STEPHAN, Cleveland, does not think that nitrate of silver should be used under any filling where there is a live pulp, on account of the liability of its causing the pulp to die.

DR. B. HOLLY SMITH, Baltimore, said he was very much pleased with the paper. This was the beginning of a series of experiments in the right direction and they should be encouraged. He thought the idea of cataphoresis taking too much time, as expressed by Dr. Abbott, was entirely out of place. Let the operator have two chairs, if need be, and a competent assistant to operate the cataphoric machine. He asked how it was that the current of electricity would carry the nitrate along a tortuous canal?

DR. JOS. HEAD, Philadelphia, said that as the canal was much larger than the tubules, it contained a greater amount of moisture and was therefore a better conductor of the electricity which would flow in the line of least resistance.

DR. JAMES TRUMAN, Philadelphia, said that nitrate of silver being a strong antiseptic would prevent the development of germs but it would discolor the tooth substance. It would be carried into the tubules by osmosis and where would its limitations be, in the pulp cavity or in the cementum? He had applied nitrate of silver to tooth substance and found that it penetrated into the

tubules. He preferred to use a medicament that would not discolor and recommended chlorid of zinc. Its application should not be by cataphoresis, however, for that would drive it through the tubules and would be apt to prove dangerous to the cementum or pericementum.

DR. M. L. RHEIN, New York, thinks that if an escharotic should be used that zinc chlorid offers superior advantages. We should use cataphoresis carefully for the electric current reduces the medicaments to their nascent state.

DR. J. TAFT, Cincinnati, thought that the gentleman had an exaggerated view of the coloration of silver nitrate. In solution it is a colorless liquid. When applied no coloration is observed but after a few moments it discolors. Nitric acid is set free and combines to a limited extent with the lime salts of the tooth. The silver is precipitated on the surface, and not in the tubules, as an oxid, which becomes inert as soon as its action is limited. The idea of possible discoloration should not stand in the way at all.

DR. A. W. HARLAN, Chicago, said that he made many experiments with teeth set in wax and plaster, and in the jaw itself, to test the penetrability of coagulating agents. A solution of silver nitrate will not penetrate the tubules to any appreciable extent; certainly not enough to cause discoloration of the tooth. The specimens passed around show that the oxid does not reach the cementum. He said he had a number of teeth imbedded, in which he had sealed nitrate of silver solution in 1894 but which he had not yet opened. He had any number of teeth in which the essential oils had been sealed. His experiments in this line have been very extended and he knew what he was talking about. Chlorid of zinc as soon as satisfied with water, stops its action. You cannot drive nitrate of silver through the apex of a normal root, for when it comes in contact with the tissues at the end of the root it forms a coagulate and limits its own action. You will not get a permanent discoloration of the dentine with silver nitrate solution, for, on account of its coagulating properties, its action is limited. He was glad that Dr. Bethel and other Ohio men were experimenting in this direction.

DR. H. L. AMBLER, Cleveland, said nitrate of silver had been often used for superficial decay and to prevent further erosion by applying it to the affected surface of the tooth. He has found

that when applied to an eroded surface by means of a minute piece of cotton saturated with the solution and the cataphoric current used, it penetrates deeper into the dentine and the effects are more lasting. Silver nitrate is superior to other agents for it makes an insoluble compound with the albumen of the tissues. In root-canals just so far as the dentine is moistened with the nitrate you get the discoloration. He has experimented on pulps of freshly extracted teeth and by means of the nitrate used cataphorically they are thoroughly destroyed. It might prove an efficient means of devitalizing pulps.

The Disinfection of Pulpless Teeth.*

BY J. W. WASSALL, M.D., D.D.S., CHICAGO, ILL.

GIVEN a tooth with a decomposing pulp, what is the nature of the pathological state with which we have to deal? We find a condition in which the pulp chamber, root-canals, and dental tubules, are loaded with putrefactive animal matter.

One has but to recall the large amount of soft tissue contained in the dentine and its formative organ to realize the danger of the situation.

Now, while the removal of this necrotic mass from the chamber and canal, and the disinfection and filling of the vacated space is a manifest necessity and is the general teaching and practice, I contend that there is not a general appreciation of the fact that the dentine itself continues to remain septic. . . .

There are three classes of cases in which we have pollution of the dentine by putrefactive products:

First.—Teeth, the pulps of which have perished from encroachment of caries, the pulp chamber being open.

Second.—Teeth, the pulps of which have died from proximity to a large filling, attempts at capping, or insufficient sterilization of the layer of caries allowed to remain over a pulp.

Third.—Pulpless teeth, the canals of which have been imperfectly filled or sterilized, or both.

A tooth, the pulp of which has been devitalized intentionally

* Abstract of paper read before the American Dental Association, Saratoga, N. Y. August, 1896.

is excluded from consideration in this connection for the reason that under ordinary aseptic precautions putrefaction does not occur.

The essential pathological condition to be recognized is the same in all three classes given. We have dead dentine infiltrated with matter highly irritating and poisonous to living tissue in intimate contact with vital cementum, which in turn is closely enveloped in pericementum.

What must the effect be on the cementum and peridental membrane of the *materies morbi* which are present in the underlying dentine?

There is no escape from the conclusion that it must account for many morbid conditions and symptoms, the etiology of which is otherwise obscure. There are no doubt exceptions of teeth in this state which cause no discomfort. But a little more time may prove that even these cases will not continue quiescent.

Unquestionably this condition is responsible for numerous affections, more or less difficult of diagnosis, varying from neurosis to remotely situated abscesses, the only subjective symptoms in the causative tooth discoverable, being a slight sense of lameness in mastication or to palpation.

What treatment does this pathological state indicate?

It will not be uninteresting to first notice some of the methods which have of late been prominently set forth. . . .

The various mummification processes are only temporarily effective, because, to use Dr. Harlan's words, "they will not stay mummified."

Emil Schrier destroys pulp-remains with a mixture of sodium and potassium, which is objectionable on the ground that the action of the drug does not extend into the entire depth of the tubules.

Prof. Frank Abbott has written a work on Dental Pathology and Practice which will be widely read. It is peculiarly unfortunate for the younger members of the profession, whose methods are most likely to be influenced by it, that that chapter devoted to the consideration of this question should be so inconsistent with modern bacteriological knowledge.

Dr. Abbott imparts a lucid understanding of the fact of putrid dentine and the conditions to be overcome, but the treatment proposed is contrary to the commonest laws of asepsis. The

triumph of modern surgery is secured by striving to prevent the entrance of germs into, rather than their destruction after admission to a wound. How hazardous to teach that a pulpless tooth may be operated upon without first adjusting the rubber dam. The neglect of this precaution against the ingress of the myriads of micro-organisms, which are always present in the human mouth, is hardly excusable at this day. Dr. Abbott also recommends the use of bichlorid solutions for syringing out the pulp debris. "This is of doubtful utility because it is at once precipitated in the presence of albumins thus losing its germicidal and antiseptic powers." (McFarland.)

It is also bad practice to pump zinc chlorid through a tooth to cauterize a pus sack until a course of treatment for sterilization of the dentine with diffusible disinfectants has first been completed.

These few criticisms are submitted in order to substantiate the charge made at the opening of this paper that much of the modern practice in the management of pulpless teeth does not conform to the present status of bacteriological science.

The successful treatment of teeth contaminated with putrid pulp matter would, to my mind, seem to depend upon the strict observance of two details of procedure:

First.—The exclusive use of diffusible disinfectants.

Second.—The repeated and continued application of the disinfectant dressings for a sufficient length of time.

The reason why I give diffusible disinfectants the preference over coagulating drugs is because I am satisfied that exhibition at the pulpal orifices of dentinal tubules forms a plug of coagulated matter which prevents the further ingress of the disinfecting agent, imprisoning within the tubules putrefactive matter which will be a permanent source of irritation to the cementum and pericementum.

If it is true, as maintained by Drs. Truman and Kirk, that the entire contents of the tubules is coagulated, there is nothing gained for the resulting mass is suitable pabulum for micro-organisms. Hence there would be no assurance that putrefaction would not recur within the tubules. . . .

In the investigations thus far published, the preponderance of evidence seems to be in favor of the avoidance of the coagulating drugs in the roots of pulpless teeth.

The second requisite to success in the disinfection of putrid dentine mentioned, was the element of time. How long shall a dressing be kept in the canal before it is proper to fill the canal? Until the dentine is permeated throughout its entire depth, and until all micro-organisms and their spores may reasonably be expected to be destroyed.

My observations are that these results are obtained in not less than twelve days—oftener sixteen or twenty—and in some few cases a longer course of treatment is required. The dressing should be changed every four days until no stain or odor is perceived on the cotton dressing other than the drug employed. Even though the dressing may come away clean on the fourth or eighth day, and you feel morally certain that the bacteria are killed, it is imperative that the use of the drugs be continued for the full period in order to also kill any spores which may be present for they offer greater resistance to germicides, and hence require more time for their destruction.

DISCUSSION.

DR. F. ABBOTT, New York, said that the crowning point of all scientific treatment is the result obtained. You may say there are spores and bacteria, etc., but if they cannot develop what is the difference? You treat these teeth day after day and what does it amount to? They are plugged up and filled with an antiseptic. This may act as an irritant. He has seen cases, treated in this way, where blood and pus was discharged after three or four days' treatment. He applies an antiseptic and keeps the parts antiseptic by not drying it out, filling in over this. He believes that coagulators should be used in the treatment of pulpless teeth and that there is no material equal to chlorid of zinc for the purpose. He asserted that if his method, as advocated in his book, was followed, there would not be one failure in a hundred cases so treated.

DR. PATTERSON, Kansas City, Mo., said that if you take a tooth that was diseased a considerable time and then filled in the manner advocated by Dr. Abbott, you would find by cutting into the dentine that it was not sterilized. This ought to satisfy any man that his method is an incorrect one and that the dentine is left in a deplorable condition. The disinfectant should penetrate every zone of dentine, as many of the after-troubles must result

from leaving a zone of dentine in such a deplorable condition as found. He did not propose to take such risk.

DR. W. H. MORGAN, Nashville, Tenn., said that many supposed that the treatment of pulpless teeth was a modern method. In 1847 teeth were treated about as they are to-day, the main difference being that they drilled them out as much as they dared. The canals were then treated with antiseptics, mainly creosote, carried into them on pieces of floss silk, which was well packed into the canal. Their test for thorough disinfection was absence of odor. He could show teeth filled forty years ago by this method that were in good condition to-day.

The teeth are easier to treat successfully in patients of good constitution. The teeth of Mulattoes are exceptionally hard to save after the pulp has become devitalized; they seem to take on inflammation and cause trouble. In fifty years of practice he has seen only two Mulattoes, adults, that had perfectly sound teeth. He thought intermarriage to blame for these conditions.

DR. BARRETT, Buffalo, said the contents of the tubuli is albuminoid in character and partially organized tissue. It will coagulate spontaneously if given a chance. It will melt out, for this is one of the laws of disintegration. It is not the character of the medicament that determines his choice of the disinfectant, for he believes it impossible to get anything into the tubules that will pass through to the pericementum. If we seal the mouths of the tubules it is not necessary to go farther, for the amount of material left in the tubules is so small that no harm will come from it. He thinks that we are getting into speculative philosophy a little too deep. The middle ground between the utter want of scientific treatment, as exhibited by Abbott, and the highly scientific treatment proposed by the essayist, was the best to take. He believes that every dentist should do his best. That honesty is the normal condition of man and until our instruction has been bad we will remain honest and choose what is best.

DR. RHEIN, New York, believes that while coagulants are not the barriers that is claimed, he does believe that they make a certain barrier to the diffusion of medicaments. By acidulating solutions of bichlorid of mercury you do away with the coagulating effects. He has found no method so effective in the treatment of pulpless teeth as that advocated by Dr. Schrier. The tubuli are left more open than by any other method he has used and conse-

quently the essential oils are more readily diffused after this treatment. He has observed cases thus treated, where the taste of the oily dressing came through the cementum after forty-eight hours from the time applied.

DR. WASSALL, Chicago, in closing the discussion, said that the most perfect method is the one to adopt. That sublimate precipitates in the presence of albumen and becomes inert. In using the combination of bichlorid and peroxid of hydrogen the good results come, probably, from the peroxid, as the bichlorid is precipitated. The discoloration of the cotton used for the dressing in a root canal, is not from the drug but from the putrid matter in the tubules that exudes by osmosis.

President's Address.*

BY J. Y. CRAWFORD, M.D., D.D.S., NASHVILLE, TENN.

NOTWITHSTANDING the great financial depression and general agitation in our country, that our profession has obtained considerable progress within the last twelve months, it would be interesting and instructive at this time to relate and emphasize, but there are other matters which more directly affect the future welfare of our vocation and the good of the whole people, that demand our attention. I desire to call your attention to the question of dental jurisprudence, or the legal enactments governing or regulating the practice of dental surgery in the United States.

I will say First, that any enactment placed upon the statute books of our common country, or any of the independent states of our common country, should rest upon the immutable principle of equal and exact justice to all with exclusive privileges to none.

Second, all laws are intended to control the conduct of an individual or individuals in regard to any definite and universally uniform question in all of the states, should be absolutely the same in all particulars.

Third, all laws should be so plain and simple in their construction that the humblest citizen could comprehend them, and if necessary administer the same in case they should be called upon so to do by the suffrages of the people.

* Abstract of paper read at American Dental Association, Saratoga Springs, N. Y., Aug., 1896.

Fourth, the penal feature should be so well marked and imperative in demand that none would dare to disregard only at their peril.

Fifth, each state should have the same enactments controlling the matter of dental education, making the requirements for graduation uniform in every particular, thus holding dental colleges up to a higher and better standard.

Sixth, the first registration of an individual to practice should be made within twelve months after receiving a diploma from a regular dental institution of learning. Subsequent registrations in any other state should depend upon the presentation of a certificate from the State Board of Dental Examiners, that the individual held a diploma from a reputable dental college, and that he had engaged only in the reputable practice of dental surgery while remaining a citizen of the state in which he first registered.

In order that this be accomplished, Dr. Crawford suggested that the American Dental Association, the Faculties Association, and Association of Examiners, each appoint one member from each state to constitute a committee.

Further he said: It is certainly evident that unless something be done in the direction of strengthening the moral force of the laws governing the practice in many of the states, the effect of such enactments now upon our statute books will become nil so far as the desired results are concerned.

We should encourage the uniformity of such laws in all of our states which have the same definite and legitimate object in view. The common patriotism of any learned profession should be willing to do at least this much in the advancement and development of the proper fraternal feeling in all of the states, thus doing something in the line of obliterating all sectional lines and objectionable sectionalism.

There are many citizens, good and reputable, now engaged in the practice of dentistry in some states who are deprived of citizenship in other states by virtue of the improper construction and requirements of some of the laws in states of this Union, thus virtually disenfranchising them to a certain extent. I would insist that the laws governing dental legislation be so constructed that no college would be regarded as reputable and entitled to public confidence, or be authorized to issue a legal diploma, which

habitually and knowingly admitted students or other persons who have been illegally engaging in the practice of dental surgery in any state.

Dr. Crawford further spoke of the National Dental Museum, and the consolidation of the Southern and American Dental Societies, suggesting that if this be accomplished, that the meetings be held in three grand divisions of our country: the north-east to have one meeting, the northwest the next, the south the next, and so alternating from year to year, that the whole profession throughout the entire country may have its full share and benefit resulting from our national organization.

The committee on this address reported that while they realized the importance and needs of such legislation, they doubted the practicability of securing absolutely uniform legislation in any large number of the states within the near future, and were also in doubt as to the expediency of appointing, at the present time, a committee to be charged with such undertaking.

Knowing How.

BY L. P. HASKELL.

AN editorial in the *Dental Digest* has the following to say upon the subject of Pyorrhea:

“The question arises, how far are we justified in assuring a patient suffering from the disease that his case is curable? If the tooth is comparatively firm in the socket, we should say it is fair to entertain a reasonable hope of preserving it for some time with proper treatment. But when a case presents itself where pressure on the grinding or cutting edge of the tooth forces it some distance back into the socket, and upon removal of pressure the tooth drops back again, there is no living person who can cure such a case. In these cases, we might say invariably, the end of the root is denuded of periosteum. Even where such teeth can be made absolutely free from deposits and held firmly by metal bands, their loss is sure to follow, and they are even less likely to be retained by tying with silk ligatures and attempting to hold in place until new bony tissue can form around them. Therefore, treatment of

such cases is only a torture and useless expense to the patient and a waste of time to the operator, who should be able to employ his time in a more useful way."

It seems strange that intelligent dentists should make such dogmatic statements, in view of the *fact* that just such cases are being, and have been successfully treated for ten years or more. If a dentist has not the ability to treat such cases, he should, when a favorable opportunity was afforded him for instruction, have improved it. A patient of his whose teeth were in just the condition indicated by him, and who was very desirous of saving them, was told they could not be saved, placed herself in the hands of Dr. W. J. Younger, who for five months past has been employed constantly, seven days in the week in Chicago, treating successfully cases of Pyorrhea, pronounced incurable by other dentists, and her teeth are now all right.

I have seen many of these cases treated, and must say it is simply marvellous. The first case of his which I saw, and which was to me an eye-opener, was in his office in San Francisco last year. The lady, six years previous, had consulted a dentist in regard to three superior molar teeth, which were so loose, and roots so exposed he told her the only thing to be done was to extract them, which he could easily do with his fingers. Having heard of Dr. Younger's success in such cases, she placed herself in his hands. This was six years before I saw the teeth, and they were all firm, and the gum margins perfectly restored and healthy.

The fact is, the successful treatment of such cases depends largely upon *manipulative* ability and delicacy of touch, which seems to be lacking in many dentists.

Dr. Younger has no secrets, and is always ready to meet the members of the profession in his cordial manner, and show them, so far as his patients will allow, his methods. But few dentists have availed themselves of the privilege, but those who have are loud in his praise.

This saying a thing *can't be done*, which is constantly being done, reflects upon the judgment of and lack of intelligence of the writer, as was exemplified in another case, when in a dental society he stated that while continuous gum work was beautiful and a perfect denture, it *could not* be successfully repaired, as it would break all to pieces in the process. He ought to have known that it is just as easily repaired as rubber work, if the dentist only *knows how*.

Necrosis.*

BY N. W. HIATT, D.D.S., MARION, IND.

NECROSIS of bone, and caries of bone, while seemingly the same, differ slightly in action. Caries of bone might be designated as the molecular disintegration of bone, or the death of an osseous structure in particles, which, as a destructive process, resembles the ulcerative action peculiar to the soft tissue, and is a slow process; while necrosis is a more rapid process of bone-death which destroys considerable portions of osseous material at a time, and is analagous to sloughing of the soft tissues.

In taking up the study of necrosis, we are first impressed by the fact that necrosis does not, in itself, constitute a disease, but is the result of previous inflammatory disease of the bone.

According to Stanley, we find the lower jaw more susceptible than the upper, the upper jaw being one of the last to be affected. The frequency of necrosis in lower jaw as compared with the upper may be attributed to the compact nature of the bone, and the inability of the inflammatory products to find their way to the surface; while just the opposite may be said of the upper jaw, which is very cancellous, and as a result the inflammatory products find their way to the surface without much resistance from the thin layers of bone covering the roots of the teeth. The injurious effect of tension is thus lessened, and in a great many cases entirely prevented. Heath tells us that "the blood supply has an important part to play as to the difference of the susceptibility of the two jaws to be attacked by necrosis." The upper jaw is supplied by humerous branches of the internal maxillary artery, which inosculates freely from side to side, and in this way nature is enabled to carry away the inflammatory product and resist the poisonous effects.

There seems to be a difference of opinion as to the blood-supply of the lower jaw. By some writers it is claimed that the arteries supplying the lower jaw do not anastomose, a condition which, if it does not exist—and I am inclined to doubt it—would make quite a difference as compared with the upper jaw, where they do anastomose. I have here some specimens of bone removed,

*Read before the Indiana State Dental Society, Indianapolis, June, 1896.

and as they are passed around, I will explain the cause to you as best I can.

Case No. 1: Was of the right superior maxillary bone, and was accompanied with abscess of antrum. When patient first called on me he complained of pain in first molar tooth. Face was slightly swollen; a large cavity on mesial approximate surface; cavity was opened and pulp found dead. Caustic pyrozone was used to clean roots and patient dismissed. The next day I was asked to call at the house, as the patient's face was so swollen that he could not come out. On examining the mouth I found what I thought to be an ordinary abscess resulting from the molar tooth I had treated, yet there was no tenderness in the tooth, which was still very firm; opened abscess, and washed in the usual way. On the next day I called again and found not only the abscess-pockets refilled with pus, but the mucous membrane of the palate, as far as the mesial line, was swollen down even with the grinding surfaces of the teeth. Both places opened and cleansed and the patient told to call at the office on the following morning, which he did, but with no improvement. Teeth were getting slightly loose, but not tender to pressure. No discharge of pus into roots of molar, so they were filled and abscess cleansed again, and patient told to come again the next morning. At this visit there was quite a little pain in the first bicuspid tooth, the second bicuspid being gone. Tooth was so loose that we removed it immediately and found quite a discharge from the antrum. On examination of the tooth extracted, I found under a cement filling a dressing of iodoform. Nerve had been destroyed and this dressing put in, but patient had never been back to have it finished. This he told me after I discovered the dressing. The opening into the antrum was enlarged and caustic pyrozone injected into it. There was no pain as a result of it, but pyrozone came out of his nose, and, seemingly, all over his mouth. This treatment was kept up three days longer, but the teeth were getting looser all the time, and had I taken a pen and ink I am sure I couldn't have drawn a line showing more plainly the line of demarkation than that shown between the two superior maxillary bones and the mucous membrane covering them. The right central was so loose that extracting it with the fingers would have been an easy matter, while the left one was immovable. Swelling had almost disappeared, but pus was coming from around all the

teeth on the right side. I removed them and found the bone, in places, had separated, and was only hanging in the gum tissue. The bone was removed to the floor of the antrum; part of that, however, we were able to save. The discharge of pus stopped immediately, and the patient was entirely well within ten days or two weeks. There was, of course, some deformity which might be overcome to a certain extent with a partial denture.

Case No. 2: Patient had a left inferior first molar treated, nerves taken out and filled, something over a year ago. Was at Atlanta, Georgia, where work was done. Tooth ulcerated and abscess formed, and opened shortly afterward, and this condition had existed ever since. The fact that there was constant drainage, there was no pain, but tooth was loose. The patient came to me because the left side of his face, and left side of lower lip, was continually numb, and, being a cornet-player, bothered him quite a little. Upon examination I found the inferior dental nerve entirely gone. The section of bone taken out extended from the first bicuspis to the third molar, and about a quarter of an inch below the inferior dental canal. The specimen I show you is the only large piece removed, the remainder was scraped and burred away. The molar tooth that had been treated, I am sorry to say, was kept by the patient. When I decided to operate on his jaw, he promised to stay under my care a week, but when the engagement of his company was over two days later, he was getting along so nicely he decided to go away with them, and promised to let me hear from him. He wrote me from over in Illinois that he was all right as far as he knew; that his jaw had healed nicely, and had no pain at all.

Within the last six months I have had two cases of necrosis so similar to the ones just mentioned that it will not be necessary to mention them.

Benefits of Dental Society Meetings.*

BY DR. D. E. DELZELL, LOGANSPOUT, IND.

ASSOCIATION stimulates ambition, develops the intellect and makes one bright and more companionable. This is as true of the professional as of the social side of life.

Man is a social being; he has advanced under social conditions, and there is, in the professional as well as the mental and moral life, profounder reasons for association as a means of education and professional growth than there are for mere material ends, and the time has come when we cannot afford, even in a pecuniary sense, to ignore associations. There is a communion of mind with mind in which probably all who associate with one another participate, however unconsciously. There is not an individual, however humble, that does not have some influence; and when we put our minds in concord with others, when our hearts vibrate in harmony with them, how much we can do for the benefit of each other.

Association gives a man greater power for growth. The growing man learns something from everything he sees or hears; nothing can touch him that does not teach him. The power to grow is fed by nothing so much as keeping the mind open to every possible suggestion from every possible source,—“to surrender one's self to the education of life is to receive and give in the largest measures.”

Progress is the eternal law of nature, and in this progressive age, with the rapid strides our profession is taking, it is necessary for us to keep wide awake and use every energy at our command in order to keep in touch with it. It takes a better dentist to make a financial success now than it did ten years ago; and ten years hence the man who sticks to the methods now in vogue will find himself more of a back number than are the laggards of to-day.

The dental society largely contributes to the fraternal intercourse and good fellowship of its members. The interchange of ideas through papers, discussions and clinics increases our knowledge, and is a well recognized avenue through which the standard

*Read before the Indiana State Dental Society, Indianapolis, Ind., June 19, 1895.

of our profession is brought to a higher plane, to not only the members but to the world at large. Here it is that men of brains and genius professionally show their light, and what is their knowledge becomes through the dental society the knowledge of all its members. It will be found that the leaders in any profession are the leaders in associations for the advancement of their chosen profession, be it what it may.

The ministers have their associations, the lawyers theirs; in fact, all callings in life have their societies. * He who scorns associations naturally places himself beyond the reach of progress; he will get into a rut, and the probabilities are that he will stay there.

Isolation dulls ambition, breeds selfishness, suspicion, distrust, until all the better feelings are blunted or destroyed.

I well remember attending the Twenty-fifth Anniversary of the Chicago Dental Society some years ago, and, with the exception of the meeting last year at Detroit, was one of the grandest meetings I ever had the pleasure of attending. At that meeting I saw a great many of the shining lights of the profession from almost every State. Now to see those men and hear them talk was to me a satisfaction worth many times the cost of time and money that I sacrificed in going.

Personally, I feel that I owe much for whatever success I have attained to attendance on society meetings. Without them I know not where I would now be, and I think that if the profession generally,—I mean those who are not in the habit of attending,—could be brought to realize the benefit to be derived from attending these meetings, there would be many more of them in attendance than there generally are.

National Association of Dental Faculties.

THE thirteenth annual meeting of the National Association of Dental Faculties was held at the Grand Union Hotel, Saratoga Springs, commencing August 1, 1896.

The following applications for membership were reported favorably by the Executive Committee for final action next year:

University of Omaha, Dental Department, Omaha, Neb.; Ohio

Medical University, Dental Department, Columbus, O.; Baltimore Medical College, Dental Department, Baltimore, Md.; Dental Department of Milwaukee Medical College, Milwaukee, Wis.

The New York Dental School announced its intention to complete its application next year.

The report of the secretary stated that there were in the United States fifty-three institutions teaching dentistry or conferring the dental degree, as follows: Dental schools in active operation, forty-six; organized during the year, two; in course of organization, one; corporations conferring the dental degree, four. Of the dental colleges, thirty-six were now members of the association, eight had applications for membership pending, two had signified their intention of applying, and the two newly organized have announced in their catalogues their intention to comply with the rules of the association.

The report of the Committee on Schools, presented by its chairman, Dr. Follett, stated that reports had been received from thirty-five schools as to their equipment under the resolution adopted last year. These reports showed that the schools were well provided with lecture rooms, and in most instances with ample laboratory and dispensary accommodations, with sufficient and appropriate appliances. They indicate a broadening in the general course of instruction, as well as fuller courses in all departments. Several colleges have recently added courses in bacteriology and extended their work in histology and pathology in practical ways. During the year 1895-1896 the number of matriculates at the thirty-five colleges reporting was 5532; graduates, 1363.

Mr. Melville Dewey, secretary of the Board of Regents of the University of New York, appeared before the association by invitation of some of the members, and gave a masterly address on the needs of the movement for higher education in professional ranks. Incidentally, Mr. Dewey explained some of the details of the system pursued in New York, and stated that, greatly to the surprise of those in charge of the various professional educational institutions in the state, the number of students had steadily increased since the higher requirements had been put into force by the Board of Regents.

Among the more important legislation enacted by the association were the following:

REGULATING THE ADMISSION OF STUDENTS.

Preliminary Examination.

The following preliminary examination shall be required of students seeking admission to colleges of this association:

———— HIGH SCHOOL, ————— 189

To the Faculty of —————

M ————— desires to present ———self as a candidate for admission to the Course of Dentistry, ———

He has pursued in this school the branches against which numbers appear—the numbers being the standings upon a scale of 100. Our course requires five recitations or exercises weekly, in each branch. Our terms are ten weeks in length.

PRELIMINARY.

| | |
|--------------------------------|-----------------------|
| 2 terms Orthography, standing. | 2 terms Grammar. |
| 2 terms Reading, standing. | 2 terms History U. S. |
| 2 terms Writing. | — |
| 2 terms Arithmetic. | 14 |
| 2 terms Geography. | |

These are required in all cases, and fourteen counts given for the same.

ELECTIVE.

| | |
|---|--------------------------------|
| 3 terms University Algebra, through Quadratics. | 1 term Commercial Arithmetic. |
| 3 terms Geometry, plane and solid. | 2 terms Astronomy. |
| 2 terms Physiology. | 2 terms Geology. |
| 2 terms Physical Geography. | 2 terms Natural History. |
| 1 term Botany, with analysis of forty plants. | 1 term Political Economy. |
| 3 terms General History. | 2 terms Drawing. |
| 3 terms Natural Philosophy. | 3 terms German. |
| 3 terms English Literature. | 3 terms Greek. |
| 2 terms Civil Government. | 3 terms Latin Reader, Caesar. |
| 2 terms Rhetoric. | 3 terms Cicero, four orations. |
| 2 terms History of England. | 3 terms Virgil, six books. |
| 3 terms American Literature. | 1 term Book-keeping. |
| 3 terms Chemistry. | 3 terms French. |
| | 2 terms Manual Training. |

(After session of 1901-1902 U. S. History becomes elective, and entitles to 2 credits.)

FOR THE SESSION OF 1897-98.

| | |
|-----------------------|------------|
| Preliminary | 14 counts. |
| Elective | 18 counts. |
| Total | 32 |

FOR THE SESSION OF 1898-99, 1899-1900.

| | |
|-----------------------|------------|
| Preliminary | 14 counts. |
| Elective | 27 counts. |
| Total | 41 |

FOR THE SESSION OF 1900-01.

| | |
|-----------------------|------------|
| Preliminary | 14 counts. |
| Elective | 36 counts. |
| Total | 50 |

For the session 1901-1902 and thereafter no preliminary credits; forty-eight credits from the studies classed as elective.

When the text-book mentioned has not been completed, the exact amount of work done should be stated.

The candidate above named is recommended as of good moral character, studious habits, and judging from the past records, able to carry forward the work of a dental college course.

The rules for the admission of students take effect with the session of 1897-8.

————— Principal.

ADMISSION TO ADVANCED GRADES ON CERTIFICATES.

The colleges of this association may receive into the advanced grades of Juniors and Seniors only such students as hold certificates of having passed examinations in the studies of the freshman or junior grades respectively, such certificates to be pledges to any college of the association to whom the holders may apply that the requisite number of terms have been spent in the institutions by which the certificates were issued.

INTERMEDIATE CERTIFICATE.

Place

Date

This certifies that ————— has been a member of the ————— class in the ————— during the term of —————

He was examined at the close of the term in the required studies, as stated herein, and is entitled to enter the

Freshman Year.

Junior Year.

[List of Studies.]

[List of Studies.]

This certificate shall by correspondence be verified by the dean of the college by which it was issued. Without such certificate no student shall be received by any college of this association for admission to the advanced grade, except on such conditions as would have been imposed by the original school, and these to be ascertained by conference with the school whence he came.

LIMITING THE TIME FOR THE RECEPTION OF STUDENTS.

No member of this association shall give credit for a full course to students admitted later than ten days after the opening day of the session, as published in the announcement.

In case one is prevented by sickness, properly certified by a reputable practicing physician, from complying with the foregoing rule, the time of admission shall not be later than twenty days from the opening day.

In cases where a regularly matriculated student, on account of illness, financial conditions, or other sufficient causes, abandons his studies for a time, he may re-enter his college at the same or subsequent session, or where under similar circumstances he may desire to enter another college, then with the consent of both deans he may be transferred, but in neither case shall he receive credit for a full year unless he has attended not less than seventy-five per cent. (75%) of a six months' course of lectures.

ATTENDANCE, EXAMINATIONS.

Attendance upon three full courses of not less than six months each in separate academic years shall be required before examination for graduation. The year shall be understood to commence August 1, and end the following July 31.

Beginning with the session of 1896-1897, the examinations conducted by the colleges of this association shall be in the English language only.

A student who is suspended or expelled for cause from any college of this association shall not be received by any other college during that current session. In case the action of the first college is expulsion, the student shall not be given credit at any time for the course from which he was expelled. Any college suspending any student shall at once notify all other members of this association of its action.

APPLICATIONS FOR MEMBERSHIP.

Applications for membership in this association shall be made in writing, favorably indorsed by the faculties of two or more colleges of the association and the board of dental examiners of the state in which it is located.

Such application shall then be referred to a special committee of three which shall be appointed by the chair upon each application. The duty of this committee shall be to visit the school applying during its session, personally examine its facilities for teaching, methods of instruction, and efficiency of the faculty, and report to the executive committee, which report shall, if favorable, be acted upon.

Each application shall be accompanied by a sum of money sufficient to defray the expenses of the special committee.

The constitution was so amended that hereafter it will require a two-thirds vote instead of a majority to elect new members.

The following resolution, offered by Dr. Peirce, was on motion adopted :

WHEREAS, In view of various reports frequently being circulated derogatory to the character of certain schools without any one being willing to prefer charges sustaining such statements,

Resolved, That the Executive Committee be and is hereby authorized to exercise full power to investigate all such innuendoes or charges by visiting the school or schools, or authorize some one to perform this duty ; summoning witnesses, etc., in order that all such statements shall be sustained or proven false.

Resolved, That a sum to be determined by the officers, president, secretary, and treasurer, be and is hereby appropriated for the purpose of paying expenses essential to the carrying out of the provisions of the above resolution.

The following communication from the National Association of Dental Examiners was read and on motion adopted :

Resolved, That this association requests the National Association of Dental

Faculties to enact a rule prohibiting colleges from receiving beneficiary students recommended by state boards and associations.

The following offered by Dr. Abbott, was adopted :

Resolved, That the committee of three appointed by the chair to report on applications for membership shall determine and report to this association at its next meeting the minimum requirements of such colleges as desire to become members of this association as to length of course, plant, equipment, facilities for teaching, and the number and efficiency of its faculty.

Dr. Brophy offered the following, which was adopted :

Resolved, That a graduate of a recognized dental college, who applies to a college of this association for the degree of Doctor of Dental Surgery or Doctor of Dental Medicine, shall complete one full course of instruction in said college and comply with all other requirements of the senior class.

The following lie over till next year for final action :

Offered by Dr. Barrett :

Resolved, That after the regular session of 1897-98 the annual college term for the members of this association shall be seven full months

Resolved, That it is advisable that the National Association of Dental Faculties in future meet in connection with the National School of Dental Technics at a time of year when the colleges are in session, and before the time for the issuance of the annual catalogues.

A committee consisting of Drs. Patterson, H. W. Morgan, and Kirk, appointed to consider the advisability of adopting the academic cap and gown for commencement day, reported in favor of adopting the intercollegiate system and in favor of lilac as the distinguishing color for dental schools. Laid over till next year.

The following were elected officers for the ensuing year : J. P. Gray, Nashville, Tenn., president ; Truman W. Brophy, Chicago, vice-president ; Louis Ottoby, Chicago, secretary ; Henry W. Morgan, Nashville, Tenn., treasurer ; J. Taft, Cincinnati, Thomas Fillebrown, Boston, and B. Holly Smith, Baltimore, Md., executive committee ; H. A. Smith, Cincinnati, Thomas E. Weeks, Minneapolis, and J. D. Patterson, Kansas City, Mo., *ad interim* committee.

The newly elected officers were installed, and the president announced the standing committees as follows : S. H. Guilford, Philadelphia, Pa., J. B. Willmott, Toronto (Canada), Theodore Menges, Chicago, Ill., L. M. Cowardin, Richmond, Va., and James Truman, Philadelphia, Pa., committee on text books ; J. A. Follett, Boston, Mass., G. E. Hunt, Indianapolis, Ind., C. N. Peirce, Philadelphia, Pa., A. H. Fuller, St. Louis, Mo., and D. J. McMillen, Kansas City, Mo., committee on schools.

Adjourned.

ALL SORTS.

Some Suggestions on Bridge-Work.

Dr. F. L. Platt sums up an article in the *Stomatological Gazette* as follows: "Never place a gold crown or band upon a tooth or root until said tooth or root has been so trimmed and shaped that the cap or band will fit *tightly* and protect *thoroughly* the cervical border of the tooth on which it is placed.

Never try to bridge too long a span—as, for instance, from central or lateral incisor, to second or third molar, or from bicuspid to bicuspid, with no intermediate support. The leverage in such cases is invariably too great, and the loss of both bridge and supports only a matter of a little time.

Always protect the facings or plate-teeth used, with *heavy* cutting edges or cusps of solid solder and gold. To do less than this, even for the sake of appearances, only invites the breaking of the facings, and the unpleasant task of removing and repairing the bridge.

Always finish the work thoroughly, so it may the more easily be kept clean.

Finally, *do honest work*, and do it in the best manner that your ability will permit."

Aluminized Gutta-Percha.

In an article in the *Stomatological Gazette*, Dr. F. W. Bliss describes this new admixture as follows:

| | | |
|---|----------------------------|----------------|
| R | White gutta-percha | eight parts. |
| | Aluminum filings | five parts. |
| | Oxide of zinc | one part. |
| | Whiting | one-half part. |

It is easily manipulated, and holds its position in the cavity when firmly packed. I have not noticed any bulging, which is so common in the pink gutta-percha. In testing for the conducting of the thermal changes, I took two thermometers that registered the same. I covered one bulb with gutta-percha, and the other with aluminized gutta-percha, being careful to have the material of equal thickness over each bulb. I then plunged both bulbs at the same instant into warm water, and then into cold water, and found that the mercury in each changed nearly alike, with a slight difference in favor of the gutta-percha, showing that

the addition of the aluminum filings does not materially increase the conducting quality of the new filling material.

If there is any one filling material to which I would pay special tribute it is gutta-percha; for although so often poorly manipulated, and consequently abused as unsatisfactory, it will in certain difficult cases, if properly used, render a better service in the preservation of the teeth than any other filling material.

Bridge-Work.

Clinic by A. G. Smith. Condition was a missing second bicuspid on the right side of superior maxilla. The adjoining first bicuspid and first molar being very solid and strong teeth, perfectly sound with the exception of a small amalgam filling in the distal surface of the bicuspid. Had time permitted, I should have preferred to replace this amalgam with gold before inserting the bridge. The tooth used was an ordinary plate facing backed in the usual way and soldered to an iridium platinum wire which had been previously bent and fitted into slots in the two adjoining teeth. The work was set first in cement and then further strengthened by building over the anchorage wires with cohesive gold. This operation is designed to meet that class of cases where one or two teeth are missing, and where it is desirable to replace them without displaying any gold or destroying the pulp in the teeth used for anchorage.

DR. G. V. BLACK: I feel like saying a word about this bridge. I have put in a number of bridges practically in that way, except the beginning of the filling is made with gold. Having fitted the supports as well as possible by building up carefully and forming to them as well as I can, trying my bridge in place occasionally until I get it to lie firmly some annealed blocks are laid on, not condensed, the bridge laid on that and the gold condensed under it by malleting upon the wire laid in the slot. The slot is broad enough to condense the next gold and weld it to that beneath, and then completing the filling over the wires that lie in the slot. It is a good many years since I made my first bridge in this way, and a number of the patients who wore these bridges are dead and have taken them to their graves with them. They have done very well. The caution I would urge from my own experience is to make the supports sufficiently strong to bear the force of mastication. I have had a few of these bend so that the tooth was out of position but still doing good service. I know of no one of these bridges that has actually failed. But I do think it is an error, although much easier to do, to put cement under these supports. And I would suggest still further that it be three cornered with one of the flat sides resting on the support.—*Dental Review.*

Substitute for Rubber Cup in Cleaning Teeth.

C. P. Lennox, Toronto, uses as a substitute for the rubber cup in cleaning teeth, a short piece of the rubber tubing used for regulating. He stretches the tubing over a brush mandrel, a "barrel stone," or any other engine point of that shape, allowing about three-sixteenths of an inch of a free end. Used on engine in same way as a cup it will spread out and follow the shape of the teeth, even going into folds and between teeth, which a cup will not do. The stretching of the rubber also causes a considerable pressure which you do not get in a cup.—*Dominion Dental Journal*.

Practical Points.

The following, extracted from the *Pacific Journal*, were given in a report by Dr. Wright, to the Wash. State Dental Society:—

In taking impressions for a full upper denture, take impression first, with plaster; scrape the palatal surface of the impression; take a thin sheet of imp. comp. or wax to fill the scraped surface; warm the imp. and press it to place in the mouth. The result is a perfect impression that requires no carving or scraping.

For vulcanite work, making models and flasking, $\frac{1}{4}$ marble dust, $\frac{3}{4}$ plaster, is highly recommended. To remove plaster from vulcanite plates, after remaining in flask over night, immerse plate for a few minutes in hydrochloric acid.

To line red rubber plate with black, coat the cast three or four times with black rubber cut in chloroform allowing each to harden before the other is put on.

To line rubber plates with Aluminum, roll the aluminum to 28 gauge; anneal the metal with blow pipe until it becomes white like unburnished silver. Thoroughly dry the cast, then with the two thumbs press the aluminum on the cast and burnish it to place, commencing in the centre and working toward the edge.

Prepare for adhesion of the rubber; use a chisel and carve plates making small hooks about 1-32 of an inch long in rows; then reverse the rows turning the hooks in opposite direction until surface of plate is covered; anneal again and adjust to the cast.

To refit rubber dentures scrape or file the palatal surface of the old plate; use mixture of thin plaster and replace the plate in the mouth; close teeth tightly together with plate in place; varnish the impression as usual; flask and pour the impression; separate the flask; remove thin coat of plaster, then roughen the plate and pack enough rubber to fill space.

In repairing rubber plates and to insure perfect adaptation of broken parts, warm sheet of wax and lay on flat surface; press teeth into wax, teeth down, properly adjusted, or use soft plaster in the same manner. When hard, pour the plate and proceed as usual.

To fill artificial teeth with gold, instead of drilling the cavity which weakens the tooth, take impression of tooth to be filled in mod. comp. or clay; get die and counter-die with low fusing metal; use 30 to 32 guage gold; stamp gold and adjust the swaged piece, letting the edge of the gold extend into the wax; pack and vulcanize in the usual manner, then finish and burnish the gold well to the tooth; the result is artistic and very satisfactory.

Mounting Logan Crowns. Dr. Ottolengui's method is to prepare the root and crowns as usual; take pure gold plate, 34 guage, about size of of the root; form hole for passage of the pin; fill the hollow space in the crown with gutta percha; place disk on crown and press both disk and crown to place on the root. The excess of gutta percha will indicate any imperfection in the adaptation, and will also press the disk firmly against the root, leaving imprint of root on disk; remove crown and disk, trim disk to the root and then trim crown to the disk; set as usual.

To band a Logan Crown. Fit band to root of tooth; fill exposed end of band with plaster or mod. composition; remove the band and press the end fitted to the root into soft wood; bore hole for the pin; remove plaster in band and press Logan Crown to place, trimming as usual.

Porcelain Faced Bicuspsids, by Dr. W. A. McCandless. Prepare root as for telescope or shell gold crown. The buccal side of ferrule is cut for the facing, Secure the articulation and solder the cap and ferrule together. Grind facing and trim opening in gold until facing fits in proper place. Back the facing with pure gold, 30 gauge, and press facing and backing into position. Secure backing in place with sticky wax; remove the facing; invest the gold and solder backing to ferrule. Trim properly and cement facing with thin cement; when hard, press the pins down to the backing and finish. In crown or bridge work invest with marble dust to prevent cracking.

Dr. Brown's investment is mixed with alcohol and may be used without drying out. The alcohol burning dries the case.

Dr. Haskell never puts wet borax on hot teeth.

Parr's flux and fluxed wax may be used in place of borax and leaves no scales on the gold and does not discolor.

In conclusion of this report allow us to offer a few suggestions:

For the protection of cement filling, resin and wax equal parts, melted on spatula and poured on filling before it is wet, is superior to either wax or paraffine.

Architects tracing cloth will carry fine emery. When cut proper width makes a good substitute for the polishing strips now in use.

To adjust the rubber dam over cervical cavities, use wire instead of clamps. After adjusting rubber dam in ordinary cases hold it in place with sandarac varnish and spunk instead of thread.

Mount disks and stones for the engine with cement.

German silver, rolled to 36 gauge and 3-16 wide makes good matrices.

A substitute for the rubber dam punch, make the hole with a red hot needle or broach; it is less liable to tear.

To renovate dirty wax, melt in water; when cool, scrape dirt, from under side, melt again in pure water, and add one teaspoonful of sulphuric acid when it comes to a boil.

To obtain absolute cleanliness of tooth before adjusting the rubber dam or for crown or bridge work, wipe off the tooth with extracts of eucalyptus or chloroform."

An Accurate Process of Fitting Bands to Badly Decayed Teeth.

The method advocated by Dr. W. H. Taggart, in the *Dental Review*, is as follows: "After the root has been ground to the gum line, or beneath it if necessary to get a good, definite outline, and the root trimmed an impression is taken with a ball of pink gutta-percha, slightly warmed but rather resisting in order to push the gum away. This impression is imbedded in plaster, and while this is yet plastic a small rubber tube is placed over the gutta-percha, add as soon as the plaster has hardened pour into this tube Melott's metal directly onto the gutta-percha impression. This metal die is then trimmed with a coarse saw and enamel chisels to have parallel sides. The band is then fitted to this finished metal root, and is absolutely accurate."

Porcelain Faced Bicuspid Crown.

Clinic given by Dr. A. H. Peck, at Illinois State Society: Band 22 k, gold, 38 gauge; backing pure gold, 36 gauge, using an Ash tooth for the facing; 20 k. solder was used for the band and the occlusal surface. The attachment of the backing to the facing, the attachment of the post and the attachment of the facing to the shell were all done at one soldering, a platinum wire having been twisted about the parts to hold the facing and the band in proper relation the one to the other. The only point the clinician wishes to bring out in this piece of work is the fact that all the soldering can be done with no investment at all, and without

the aid of the blow-pipe; only the flame of a Bunsen burner being used. The doctor has soldered all cases of this kind in just this manner for the past two years, and as yet has had no failures.—*Dental Review*.

Solid Cusps.

DR. CEPHAS WHITNEY gives his method in *Items* as follows:

Proceed by removing sufficient material from occluding surface of tooth, providing there is any remaining, till a piece of metal, plate No. 27, placed on cut surface, will not interfere with occlusion. This refers to the minimum cut on grinding surface only, the buccal, lingual and proximal surfaces being prepared as usual. Take ordinary double-pointed drawing compass (small) to measure width of band, by placing one point a little below gingival border, and the other point at buccal occluded edge. Use this on gold plate as a gauge to scribe band, much like a carpenter uses his gauge.

Get your circumference, and solder in usual manner.

After fitting band to tooth, level occluding edge with fine, broad, flat file, first getting your depth with excavator while on tooth.

Seal band, and with softened modeling composition placed in same, procure bite, being careful to have patient give you all the movements of the lower jaw as in grinding. A little experience is now necessary to trim this model neatly, from an esthetic, as well as occluding standpoint; it often being advisable to change its form in small details. It may be trimmed flush with the band on its sides. With wide No. 36 or finer saw, remove model by passing saw close to beveled edge of gold.

Place pattern, cusp side up, on glass plate, oil well, surround with paper or rubber ring and run the following composition over it to a depth of about three-fourths inch:

| | |
|------------------------------|----------|
| Plaster of Paris | 6 parts. |
| Plumbago | 3 " |
| Asbestos (grade 3) | 6 " |
| Soapstone (pulv.) | 1 " |

On removing from the ring, the composition pattern may be lifted from investment by using a pin, having previously marked the thickest place. Dry out in Lewis case heater, or, if time is limited, carry to level soldering pad, ball up sufficient gold, same karat as band, with blow-pipe, to fill impression made by pattern, and press quickly but evenly down with large-faced hammer. You now have a *fac simile* in gold of your composition model. This solid cusp piece must be leveled on its flat surface till it is same thickness of pattern. This can be done by driving

cuspid side down into end of wood, leaving out a little more than is sufficient to remove. The wood forms a grip, and you may now file, using an appropriate one with confidence.

The final stage is done with great ease and despatch, for, providing that you have followed instructions closely, you will find that solid cusp will fit beveled edge of band, coming out flush and neat at the margins. You have only to paint your borax on edge of band and flat side of cusp piece, adjust with wire or place in soldering tweezers, and solder with very high grade stuff, say two karats down, using only a small quantity.

Fine file, finishing bur, cuttle-fish, tripoli, rouge, "and there you are."

The apparent advantages of this method are these:

1st. Excellent adaptation for grinding food.

2d. Absence of any mass of inferior gold, only five or six pieces of high grade solder being used—a grain and a half for the largest crown.

3. Freedom of solder running on to band, thus causing same to impinge on tooth.

4th. Generosity of grinding piece, thereby insuring a lasting surface, no holes appearing in a year or so from triturating, as in the ordinary crowns. A large molar crown made by this process weighing quite two pennyweights.

5th. Absolute reproduction of model, with all the fine lines. Superiority to method of driving a model into dampened asbestos, which is not only indistinct in detail, but the eminences, which are counter to fissures and depressions in model, never rise to fill same.

The Use of Cocain for the Extraction of Tooth Pulp.

In the *Dental Headlight*, Dr. U. D. Billmeyer says he has tried several ways of injecting cocain into the pulp but the following he has found most satisfactory in all cases:—

"Place a piece of beeswax in and over the cavity in such a way that, by pressing with the finger, gently at first but firmly, on the wax, it will inject the cocain into the pulpy, with usually but a slight twinge of pain, but by gently continuing to push the wax into the cavity, in a few moments pain will entirely cease and you can press as hard as you desire on the exposed pulp, and there will be no sensation whatever. The manipulation in this part of the operation must be somewhat varied, as the peculiarities of your patients vary. A very nervous patient must be handled carefully at first, but will finally settle down, become perfectly relaxed, and will have gained such complete confidence that you can operate at your will."

Porcelain Inlay Work.

REGARDING this operation Dr. Ottolengui spoke of the following method at the Dental Society of the State of New York, which we clip from the *Cosmos*:

"If the process is to be limited to labial surfaces of the anterior teeth, it is evident that the demand for the filling would be comparatively infrequent. Therefore let me consider an approximal and grinding-surface cavity in the anterior of a first bicuspid. The matrix is made with No. 3 rolled gold. This is preferable to 40 or 60, because it takes a sharper impression. To obtain this matrix is most difficult. It is very simple for the advocate of the method to say "make the matrix." and then pass on to the methods of fusing the porcelain. But the dentist will discover that many attempts to obtain a perfect matrix from an approximal cavity will prove abortive before one will be removed which is absolutely accurate, and if not absolutely accurate is worthless. Practice has taught me that the cavity must be shaped so that, in the class of cavity which I am describing, the matrix may be withdrawn through the opening at the grinding-surface. The gold is folded in half, forming a V-shaped trough and is passed into the cavity. Then proceed to fill the cavity with small pieces of spunk, holding the pieces in position with a small ball burnisher. No great pressure should be attempted until the cavity is practically filled, otherwise the gold will be torn, which in my experience *does* make a difference, and therefore should be avoided. The gold is burnished over the edges of the cavity with spunk, used with a wiping motion. To remove the matrix, take out all of the spunk, and then "tease" the matrix out. By this expression I mean that the matrix is to be tapped gently along the edges, and manipulated with great care until it drops out of itself. Any forcible removal will alter the shape.

The powder is mixed with water and placed in the matrix, when excess of water is extracted with bibulous paper. For the first baking fill about half full. Fuse thoroughly. Then add material, and fuse again, until the desired shape is obtained. Here occurs a step which is original with Dr. Jenkins. The filling being complete, he lays over it a bit of blown glass, and again fuses, the melted glass flowing down smoothly and forming a glazed or enamel surface of great beauty.

The main difficulty with this method is in connection with the cement. Before cement is used, the filling placed in the cavity is perfection itself, and if the color has been accurately imitated, it would be impossible for human eye to detect the outlines of the filling. But the insertion of the cement changes all this. When it is remembered how thin was the matrix, it will be recognized that no cement now on the market can be

mixed thin enough to fill the space occupied by the gold, and consequently the filling is lifted from its present position by the interposition of the cement, and an edge shows. To overcome this I have essayed the following method: After making the filling, grind away a considerable portion with a corundum, being careful not to touch the extreme edge. This makes space for the cement, and by roughening the surface of the porcelain allows the cement to stick better. Place cement in the cavity, not on the filling, and in a very small quantity. Press the filling to place, and if the cement oozes out, remove the filling, quickly cleanse the edges, and as quickly return it to place. In this manner I have inserted a few fillings which have quite satisfactory edges.

At first, as advised, I used Harvard cement, and I had great difficulty. The fluid is so thick that the mixing to a thin consistence was well nigh impossible; moreover, the setting is so slow that the fillings would come out in a few days, undoubtedly the fluids in the mouth having disintegrated the cement before fully set.

I have fillings in, which have remained for six or eight months, and which are still doing well, which I inserted with Dawson's cement. The best cement will be that one which is of fine grain, and which sets moderately slowly. Then it is best, after setting the filling, to have the patient remain in the office, with dam in place, for half an hour or longer.

At the present stage of this process, I can recommend and even advocate it in accessible positions, where the question of time and fee are of less consideration to the patient than the personal appearance. But my own experience even with the wealthy of this country, leads me to the belief that, ordinarily, Americans will prefer gold.

In inaccessible places the gold must be our reliance, and I have little faith in porcelain for contouring corners."

Treatment of Infectious Gingivitis.

In an article published in the *International*, Dr. C. G. Cumston gives the following treatment:—

"No matter what variety the gingivitis may be, it is a microbic manifestation, and in order to cure it the bacteria must be attacked; this is accomplished by severe antiseptics of the buccal cavity. First of all the tartar should be removed, as it is a real culture medium, and a gargle of carbolic acid, one in two hundred; thymol, one in one hundred; or a more elegant and agreeable preparation may be chosen, such as Metcalf's spray solution or listerine.

The permanganate of potassium I can highly recommend for buccal antisepsis, and I prescribe,—

R. Kalii permanganat., 0.50;
Aq. menth. pip., 40.—M.

Sig. From eight to ten drops in a glass of tepid water as a mouth-wash.

The use of saccharin combined with salicylic acid has also a favorable action in these cases, the following formula being an excellent combination :

R. Saccharin,
Natrii bicarb., āā 1;
Acid. salicylat., 4;
Alcoholis, 150;
Aq. menth. pip., 50.—M.

Sig.—Half a teaspoonful to a glass of tepid water as a mouth-wash.

For the fungosities cauterization by chromic acid crystals or nitrate of silver, applied on cotton tampons, should be practiced. In some cases the galvano cautery may be necessary. Chromic acid is, I think, perhaps the better, as its action is limited to the point touched, and the slough is eliminated in three or four days. The epithelium will have appeared in a week or so after.

When there is gangrene the foci should be destroyed by the galvano-or the thermo cautery."

Pyorrhea Alveolaris.

At the Illinois State Dental Society, Dr. A. W. Harlan treated five cases of pyorrhea alveolaris, the first being incipient pyorrhea. After removal of all deposits with instruments sterilized in boric acid, saturated solution, the case was injected with an emulsion as follows;

| | | | | | |
|-----------------|---|---|---|--------------------|---------|
| Alumnol | - | - | - | - | gr. v. |
| Resorcin, | - | - | - | - | gr. v. |
| Oil gaultheria, | - | - | - | - | min. i. |
| Water, minims | - | - | - | ad. q. s. m. c. x. | |

This is used once in three days.

Case 2. This case involved three inferior incisors, two molars and one bicuspid. After the surgical treatment a 2 per cent. solution of trichloroacetic acid was injected into all the pockets, to be followed in three days with the first prescription for a period of about twenty to thirty days, every third day.

Case 3. Inferior third and inferior second molar. As the gums were sensitive, chloral-camphor was used as an anæsthetic. When the

surgical work was done—and having been done painlessly—the pouches were injected with sulpho-carbolate of zinc, 5 per cent. solution, to be repeated in three days.

Case 4. Superior molar without antagonist. Anaesthesia was induced locally with chloral-camphor, and the pockets treated with acid trichloroacetic, $2\frac{1}{2}$ per cent. in water.

Case 5. Superior lateral incisor and cuspid, with a pouch on the lingual aspect of the incisor and one on the mesial surface of the cuspid. In three minutes anaesthesia was induced with chloral-camphor, and all deposits having been removed, the pockets were injected with acid trichloroacetic 5 per cent.

Dr. Harlan used platinum and gold needles for injecting pyorrhea pockets. They are brought to a red heat in a spirit flame before being used under the gums in every case. When teeth need ligating for a time pure silver suture wire is used, as the pathogenic bacteria will not grow on a silver plate. (See Johns Hopkins Hospital reports.) When teeth are to be banded he prefers silver bands to either gold or platinum."

—*Dental Review.*

Making Metal Dies Direct from the Impression.

The following method printed in the *Cosmos* was presented at the Interstate meeting by Dr. E. I. Woodbury:

"The nearer we come to the mouth, the better will be the result. In the old process of sand molding there were several transfers, and each step involved changes and defects. In this process there are but two transfers,—first, the impression, and, second, the pouring and pressing down of the molten metal. In the new process the metal is poured in a semi-plastic condition, and tamped in the mold to avoid the spheroiding involved in the old procedure, when the metal had to be poured very hot. The material for the impression is a fine clay, or a clay compound, with an equal part of plaster, which is the *aluminous compound* he uses. It will not shrink nor expand. It is a good investment for soldering. He uses a perforated tray, made in parts, composed of an alloy of two per cent. of copper with aluminum. This will stand the heat of the temperature at which the metal is poured. It is perforated for drying and permitting the escape of steam. Any die metal may be used, but he prefers Babbitt metal and lead and tin for the counter-die. The flasks are made in three parts. The impression is held in the lower part, filling in around it with the investment compound. The middle part of the flask is made to hold the metal. The impression is trimmed to relieve pressure in the

proper places, for the metal model cannot be trimmed afterwards. After drying and heating the investment portion, the Babbitt metal is melted to mere fluidity, then stirred to make it plastic, poured into the impression, and tamped down well to make it fill all portions well and prevent spheroiding. It is cooled in water; dry it well, and smoke to prevent adhesion, and pour the counter-die metal. There are four special advantages in the process: (1) the short time required to make the die; (2) the low temperature at which the metal can be poured; (3) all irregularities can be sharply taken; and (4) the ease of the process, by which even a novice can get good results at once.

DR. HUNT. It is curious that prosthetic dentistry receives so little discussion in dental meetings as compared with operative dentistry. There are many expert operators, but few expert prosthetists. But we are about entering on an era similar to that of thirty or more years ago, —a period of metal, when gold will be used more and more. We are coming back to the gold methods of three or four decades ago, in order to get the best results in practice. Forty years ago Dr. Clark described a method similar to this for obtaining dies direct from the impression; but this is much superior to his. The ordinary methods of obtaining dies are very defective. It is a great advantage to have something like this method to use which will give better results."

Mummification.

One of the anomolous things connected with the practice of dentistry is the idea that a tooth pulp can be mummified and be allowed to remain in the canals of a tooth with a filling over it for an indefinite period. In no other portion of the human body would a surgeon dare to try and mummify any soft tissue. Rarely there is mummification of a foetus, but what are the results? Always disastrous. In the recent literature —covering the last five or six years—we are offered from time to time a new method of "obviating the necessity for removing a devitalized tooth pulp." Sometimes it is Herbst, again it is Miller or Soderberg, or De Ford, or some one else. Coleman proposed some years ago the use of arsenic and chalk, or arsenic, chalk and creosote. Fletcher used glycerine, chalk and arsenic. Witzel has also offered several formulæ for drying up the pulp. Soderberg uses alum in his mixture, claiming that it is useful in tanning leather. Under just what circumstances, leather, after it is tanned with oak bark or alum is placed in the same conditions that a tooth pulp is, is not apparent to the writer. The past forty years or more has not sustained the idea that tooth pulps selected or chosen at

random can be allowed to remain in a sealed chamber indefinitely. All of nature's laws point to the fact that a thing which is dead ought to be removed. This is true of other portions of the human body, why not of the teeth? There is no certainty that the apical end of a tooth can be encysted, or that it will be encysted after the soaking of a pulp in a paste of Witzel, Miller or Soderberg's composition. It is hardly possible to suppose uniformity under such circumstances. Ten or twenty per cent. of successes would not justify such practices. With our present knowledge and the perfection of methods of removing pulps and filling roots no one would care to risk his reputation in private practice on such a foundation as the mummification of pulps rests upon. The gentlemen who are pounding away at this subject would better employ their talents in complete removal of pulp, when dead, and the subsequent filling of roots with unalterable precision than to advise or employ such uncertain means to retain dead pulps in the teeth with the possible consequences to the patients, innocent in knowledge of such attempts at experimentation upon them. We would not expect to place a crown or bridge upon a tooth treated to mummify the pulp, why then should we expect a better or more certain result under a filling?—*Editorial Dental Review.*

Root Canal Fillings.

Dr. Frank Smith uses points made of about one-half as much iodoform as paraffin or wax. A point is inserted in the canal and followed by the heated Evan's root dryer, which drives the wax into the tubuli. This is repeated till the canal is filled, and makes all solid. Dr. Walker uses points made of "dressing seal," moistened with creosote; the cold points inserted and followed by a blast of warm air and packed with cold instruments. Dr. Martin places a small disk of rubber dam on the broach, which lodges at the mouth of the canal as the broach reaches the end of the canal, and thus gives him the depth of the canal and proper length of point to use in filling. He has found Gramm's copper points the acme of desirability, but has only been able to obtain one box of them. They are used in connection with paraffin cones, a heated copper point is introduced and left in position, completing a perfect filling.—*Items of Interest.*

To Solder Teeth.

When backing a tooth, my plan is to countersink the back and rivet with a fine-edged hammer, supporting the tooth meanwhile on the edge of

a piece of lead held in a vise. This I think better than splitting and spreading the pins, as some recommend, because the borax and solder are more easily kept from flowing through the back and fracturing the tooth. In soldering I use a jeweller's wig on which is placed a sprinkling of asbestos fibre to prevent the discoloration and cracking of the teeth, the soldering being done without investing. The teeth are then allowed to cool, and the backs are filed up before the teeth are waxed in position on the plate. When in position, the teeth are invested in sand with a slight admixture of plaster, and the final soldering is done in the usual way.

In making a gold bicuspid crown with a mineral face I am able by the above method to make use of the mineral face to hold the back in position while soldering the back to the crown, and this without investing, and without cracking or discoloring the face. I do not solder the back to the tooth, if I can avoid it.—R. P. LENNOX, *Ash's Quarterly*.

Aluminum Solder.

From a late number of the *Scientific American* we find that a substantial solder aluminum has finally been discovered. Its composition is aluminum 1 part, 10 per cent phos. tin 1 part, zinc 11 parts, tin 23 parts. It fulfills the requirements demanded so perfectly that it is now generally adopted both in this country and Europe.—*Western Dental Journal*.

"Spot Specialism."

This is a new term used to designate the specialist crank who goes on dividing a specialty into its subdivisions until only one spot is considered worthy of study. The term is commended to some of our friends who dislike the hard work of some departments of dental practice and desire to confine themselves to that which is easy and remunerative.—*Western Dental Journal*.

The Auxiliary Plate Support.

THE illustration represents a device suggested by Prof. C. J. Essig's method of preventing the slipping backward of partial lower plates. As shown in the cut, but three teeth remained in the lower jaw. The superior arch contained natural teeth on the side from which they were missing in the lower jaw. The stress of mastication would therefore tend to displace laterally any artificial denture that might be inserted. Clasp-

a bicuspid and molar, as was done in the case, would bring such a strain upon these teeth that they would become loosened. An additional support being indicated, the bar represented in the cut was applied.



A plate made of two laminæ of 18K. plate No. 30, or a single lamina of No. 24, is swaged to fit perfectly and to extend back on the alveolar ridge posterior to the molar; at this aspect, and at the part next to the cuspid, it is carried over the ridge, so as to offer points of attachment to the bar. Extending across that part of the plate which is beneath the natural teeth remaining, over the plate back of the molar and anteriorly along about a half-inch of the lingual border of the plate on the opposite side, a piece of platinum gold (clasp metal) No. 27 is soldered, being frequently annealed and swaged to perfect adaptation; broad clasps, No. 22, are fitted to the bicuspid and molar. The piece is now rigid enough to resist all stress. Along the buccal aspect of the arch and about a quarter of an inch below the cervixes of the natural teeth a piece of very broad, half-round gold wire was accurately fitted; resting lightly against the gums along its entire length, its extremities overlapping the points of plate about a quarter of an inch. The pieces were then cemented together, invested and soldered. The teeth were arranged; a series of cleats soldered in proper position, the teeth attached by means of vulcanite.

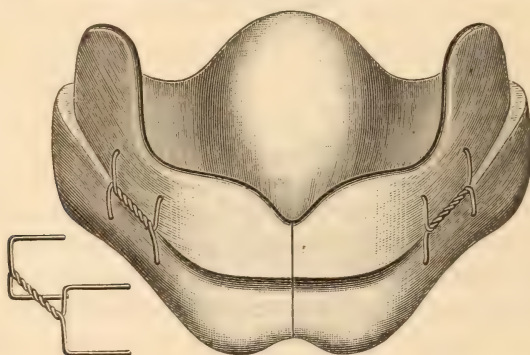
There is a matter which suggests itself relative to clasps. A clasp should be broad enough to grasp (when not in view) all of the enamel-surface of a crown. Narrow clasps have a tendency to wear the teeth.

In a majority of cases where these appliances appear to abrade the teeth, the true cause is the fermentation of food débris which insinuates between clasp and crown; the loss of substance being due to chemical causes, not to mechanical. Very, very rarely does a properly fitted and properly finished clasp cause loss of enamel through mechanical abrasion. Usually when teeth are worn by the presence of clasps, the cementum has been embraced, not the enamel alone.

Keep clasps from close contact with any dental tissue but smooth enamel, make them broad enough, and at least nine out of ten cases of loss of tooth-substance will be found due to chemical solution, not present if proper precautions as to cleanliness are taken by the patient; the remaining case might be due to mechanical abrasion.—Henry H. Burchard, in *Dental Cosmos*.

Bite-Locking.

THE common method of making diagonal or cross-cuts on the buccal sides of the upper and lower wax models when taking the bite for a full denture has never been satisfactory to me, as they may separate in the act of removal. I have therefore made and used wire bite-locks like that



shown in the illustration. The prongs are made long, but may be clipped off for use in thin models. When these are closed upon each other in the mouth, I slightly warm a bite-lock and press it into place, as shown in the cut. The models can then be taken out without risk of displacement.

I have made other forms of bite-locks, such as staples similar to stationers' paper clips, and have used them crosswise, but none of the various other devices have proved satisfactory. I am confident that no dentist will regret a trial of this bite-lock for firmly fixing together the wax bite models.—Dr. J. A. Robinson, in *Dental Cosmos*.

BRIEFS.

Aristol and Gutta-Percha dissolved in chloroform, becomes a hard and glassy mass when the chloroform evaporates.—*R. H. Cool, Stomatological Gazette.*

Separating Medium.—In making counter-dies, sprinkle the die with French chalk, and you will have no trouble if you use it carefully.—*E. A. Lundy, Stom. Gazette.*

The Abuse of Alcohol very frequently tends to produce chronic ulceration of the gum. Irritation of a less severe character may be induced by continuous smoking.—*Klingelhofer, Ash's Quarterly.*

Pulp Dressing.—Dr. Holland applies oil of cloves to the pulp for fifteen minutes after applying arsenic, and usually accomplishes the death of the pulp without any discomfort to the patient.—*Register.*

Removal of Pulp Tissue Fibres.—Dr. T. P. Hinman applies trikresol to the minute fibers of living pulp tissue, often so difficult to remove. A heated broach is then used to char the tissue.—*Register.*

Trichloroacetic Acid.—A 2 per cent. solution of trichloroacetic acid is not a powerful escharotic. I use it for the purpose of acting as a stimulant and astringent and as a possible germicide.—*A. W. Harlan, Review.*

Gum Mastic After Bleaching.—Dr. Hinman after bleaching a tooth with pyrozone, uses gum mastic dissolved in chloroform, to line cavity and canals. It seals tubuli and prevents further discoloration.—*Dental Register.*

How to Do It.—To develop into a strictly first-class dentist one must practice in doing the most difficult and skillful operations of which he is capable. Thus we are ever learning by doing, and growing by doing.—*A. R. Melendy, Dental Headlight.*

Investment Material for Porcelain Denture.—Use $\frac{1}{6}$ powdered silic, $\frac{1}{3}$ ground or fiber asbestos and $\frac{1}{2}$ plaster. This mixture will also be found to be excellent for crowns or bridges as there is but little shrinkage and no tendency whatever to crack.—*J. H. Prothero, Review.*

Metal Crowns.—For twenty-eight years I have given metal crowns a thorough test, and while they do not look well, I see many of them that have done such good service that many of the porcelain crowns, adjusted from a modern standpoint, cannot equal.—*W. N. Morrison, Dental Review.*

Platinum Blue Line.—Sometimes a blue line appears at the margin after using platinum. I have overcome this defect by flowing a little pure gold foil over the band at that point, before I bake the porcelain. By doing this no blue line appears. This, however, will only protect in the low fusing body.—*G. D. Sitherwood, Review.*

To Prepare White Gutta-Percha.—My object when using gutta-percha is to get it snow white. I dissolve it in chloroform, then make a

solution of chloride of lime, in which I let it stand for a week. I then filter it and expose it to the sun for a week, when I have a pure white gutta-percha.—*Max Stichel, Stomatological Gazette.*

Pyrozone Deleterious to Amalgam Fillings.—Dr. Hinman has been forced to the conclusion that pyrozone 3 per cent (medicinal), used as a mouth-wash, is very deleterious to amalgam fillings. He has observed fillings that had been doing good service for ten or fifteen years simply ruined by the chemical action of the pyrozone upon them.—*Dental Register.*

Exostosis.—I believe that wherever exostosis has taken place it is after the development of the tooth, and in *no case* is it produced during foetal life. And further, the examination of some teeth show that it is probable that these changes have taken place after the death of the pulp, and correspond to certain changes that take place in the pulp canal.—*D. E. Causb, Dental Record.*

Platinum as a Base for Dentures.—I have seen cases, after years of wear and inattention, removed from the mouth as clean as the day they were made. And again, I never remember hearing, on any occasion, complaints as to “a peculiar taste,” which I have heard in the case even of gold; but much more frequently with regard to dental alloy.—*H. R. Boutell, Jour. Brit. Asso.*

To Prevent Discoloration.—As to change of color and shade after soldering, I always take the precaution to paint between the backing and the tooth with whitening dissolved in alcohol. I generally use platina for back, and flow 18 k. gold over it. I find the safest way is to invest the tooth. I put chalk in the plaster, half-and-half, and there will be no cracks.—*Dr. Lomborg, Stom. Gazette.*

Self-Control of Nerve Force.—This is the great lesson of health, and, therefore, of life itself. To understand how to relax is to understand how to strengthen nerves. Hearty laughter is a source of relaxation, as are also all high thoughts, as those of hope, beauty, trust or love. Relaxation is found in diversion. An occasional summer outing or holiday is necessary.—*Nashville American.*

Adenoid Growths.—While I am unable to give statistics, I think it safe to conclude, judging from my personal experience, that up to the twelfth year fully ninety per cent of the cases of mouth breathing result from adenoid obstructions in the naso-pharynx.

With the post-nasal curette, with or without a general anesthetic, they are quickly, safely and permanently cured.—*T. C. Evans, Dental Digest.*

Carbolic Acid a Tooth Softener.—Of one of the so-called antiseptics I would urgently ask you to beware. I speak of carbolic. You have only to enquire amongst your patients to verify my statement that this carbolic has a great deal more to answer for in softening, whilst at the same time whitening the teeth, than any other of the extensively advertised enemies of conservative dentistry.—*J. G. Rankin, Dental Record.*

Electrozone and Cocain in Cataphoresis.—The combination of fifteen per cent of cocain in electrozone makes the preparation that we are after. The first result of mixing them together is that the solution turns a creamy white color for a moment, then turns to a deep yellow. What it is I do not know, but the effect of the preparation—and I have used it right alongside of other preparations—is remarkable.—*Dr. Brown, International.*

To Solder a Pin in a Tube Tooth.—When making a dowel-crown I insert the thick or root end of the pin into a light copper tube which will hold it without carrying off too much heat, tin the end of the post which is on the point of the post, hold over a gas flame, and drive the tooth home, being careful that the post takes its proper position, which will be shown by the facet at its end properly fitting the surface of the tooth.—*R. P. Lennox, Ash's Quarterly.*

To Prevent Cracking.—Another great cause of cracking, I think, is drawing the pins together after the backing is in position. If they are drawn very firmly, it produces a strain, pulling on the porcelain at that point, causing checking from that extra strain put on it by closing these pins together. To overcome this, I think it is policy to barely bend them down sufficiently to keep the back in position, while you apply the solder and heat the piece.—*Dr. Bromell, International.*

Antral Disease.—It is very necessary for the general practitioner to familiarize himself with diseased condition of the antrum, that he may not be deceived or allow them to escape. Here, as in orthodontia, he should be in touch with the specialists, although he cannot expect to attain their skill in treating difficult and obscure conditions. But he should be able to treat simple cases in a simple manner, and for safety refer the more difficult cases to the specialists.—*Cosmos.*

Grinding Teeth for Porcelain Dentures.—Too much grinding should be avoided, as the best results are obtained by allowing as much as possible of the tooth and its extended portion or root, so to speak, to rest against the plate. If considerable absorption of the border has taken

place it may be necessary to build up a fence or truss of platinum under the pin to support the teeth to prevent displacement during the first fusing of the body.—*J. H. Prothero, Dental Review.*

To Shorten a Tube Tooth.—For this work I use a tool with two chisel edges facing each other in a frame, one of them being movable. The tooth is placed between these edges and cracked with a blow. The portion to be got rid of is then split by forcing an old excavator, filed to taper, into the platinum tube, and the exposed portion of this tube is afterwards removed with a saw. By this method there is no risk of damaging the portion of the tooth that is to be used.—*R. P. Lennox, Ash's Quarterly.*

Result of Pulp Capping.—Capping of exposed pulps was the rule which more often resulted in failure than success, and in many cases of apparent success they have been so for a few years only. The theory of many has been, that the capping would cause a secondary deposit of dentine, thus protecting the pulp. In many of these cases the deposit has been in the shape of pulp-nodules and other forms of calcifications, thus causing the opposite result, its own destruction.—*G. A. Maxfield, Cosmos.*

Nerve Tension.—Many people wear themselves out needlessly; their conscience is a tyrant. An exaggerated sense of duty leads many a person to anxious, ceaseless activity, to be constantly doing something, over-punctual, never idle a second of a time, scorn to rest; such are in unconscious nerve tension. They say they have no time to rest, they have so much to do, not thinking they are rapidly unfitting themselves for probably what would have been their best and greatest work in after years.—*Nashville American.*

Chloral Camphor.—There are many times when you do not wish to use cocain solutions or other drugs that are likely to be poisonous, and you will find that if you will take a pair of pointed pliers and dip it in a solution of chloral-camphor, passing it gently around the root of a tooth which is free from blood and saliva, as well as you can in a short time, an operation that is usually very painful would in some cases become entirely painless, in others almost so, and you have not a bad smell-drug in the mouth.—*A. W. Harlan, Review.*

An Aid to the Filling of Nerve Canals with Gutta-Percha Cones.—After you have moistened the canals with chloro-percha, or any other medicaments preferred, cut the cone shorter than the canal, and, after packing it in loosely, take the hot-air syringe using the air just warm enough to soften the gutta-percha, then with cold instruments press the

filling to place; by doing this, you gain in two ways, you dissipate the excess of chloro-percha, are not troubled by your instrument sticking to the filling.—*E. A. Lundy, Stomatological Gazette.*

Use of Balsam del Deserto.—The method of using it which I have adopted is, to substitute it for chloro-percha, using the gutta-percha cone when it is feasible. In capping exposed pulps I use the balsam on a piece of sterilized paper, laying it directly on or over the pulp, and proceed as in any other capping. In about fifty cases, I have not had a failure to my knowledge. I have also capped ten or twelve exposed pulps, several of them being complete exposures, with the loss of but one so far as I know.—*C. G. Edwards, Dental Digest.*

Dental Societies.—The spirit of a society's action should be altruistic. The terms of admission should be really inviting, not nominally so. The welcome should be generous, not repelling. The rank and file would thus be encouraged and stimulated to self-improvement. Clubs and coteries would still adopt methods to protect their exclusiveness. With them, social qualifications may rightly continue to influence the choice of membership. In a popular body this cannot be, and a state society should be a popular body.—*J. C. Walton, Cosmos.*

To Check Excessive Flow of Saliva.—Dr. H. O. Logue cites a case of lower third molar, where flow of saliva was excessive and application of dam impossible. He says this was overcome through the action of sulfate of atropin, a dose of which ($\frac{1}{120}$ grain) I had her take three-quarters of an hour before her next appointment. At that time I found the mouth very dry, though not uncomfortably so. The salt of atropin has a much better effect on the secretion than the ordinary alkaloid. Its manifestation lasts from four to five hours.—*Items of Interest.*

Strong Carbolic Acid Self-Limiting.—It would be safer to pour a gallon of pure carbolic acid into a purulent thoracic cavity than to pour in a gallon of water into which a single ounce of carbolic acid has been placed. I will go even further, and say that excess of the strong acid in a cavity such as an abscess cavity, or upon exposed tissues, as a burn or a flesh wound, does no harm, while excess of a dilute solution, if left in a cavity or used over an extensive raw surface, will be promptly followed by dangerous, if not fatal, toxic effects.—*G. H. Allis, in Polyclinic.*

To Destroy Vitality in the Remnant of Pulp Tissue, which so often gives trouble to get rid of after the death and removal of the body of the pulp, Dr. Hinman uses trikresol, passed carefully down into the canal, followed by the use of a heated broach, burning the festers to a crisp. Dr. Martin uses crystals of trichloroacetic acid for this purpose.

Dr. Frank Holland relies on the electric root dryer, or a hot Evans' root canal dryer. Actual cautery causes absolute anesthesia. Dr. West uses the fifty per cent solution of sulfuric acid, which makes the fibrils stiff in a few minutes, so that they are easily removed.—*Items*.

Methods of Attaching Porcelain Facings after Soldering.—

Dr. F. M. Shriver backs up with platinum and then with another piece of platinized gold to carry over the edge of the tooth to make a hard biting surface. A polished gold edge does not cut so well as a sharp edge. The palatal face of an artificial incisor should be convex like the natural tooth, and with a sharp-cutting edge. After soldering the bridge, slightly countersink the pivot holes, set the teeth on in soft cement, press out surplus, grind the pins down, place the teeth on soft tea lead, and rivet the pins down with a small riveting hammer.—*Cosmos*.

A Hemostatic.—

| | | | |
|---|-----------------------------|-----------|--------|
| R | Pulverized rosin (common) | . . . | 3 iv. |
| | Carbolic acid (95 per cent) | . . . | 3 jii. |
| | Chloroform | | 3 ji. |

M.

Make a short, thick cotton rope, larger than the wound to be treated, moisten the end well with the compound and plug the cavity tightly. The bleeding will cease almost as if by magic.

Remove cotton after lapse of a few hours,—*J. V. Wicks, Items of Interest*.

A Caution Against Too Heroic Cutting.—I desire to caution young men not to be heroic and cut down and destroy a better natural crown than the artificial one put in its place. While I like to see a porcelain face well adjusted, I think we ought to keep in mind the durability of the operation, which ought of itself to be paramount in the minds of our young men. . . . Cases come to you time and again to have their crowns adjusted and recemented. There was too much heroic cutting upon the root in its preparation. I merely rise to caution the younger men to go slow, and to allow their æsthetic taste to be somewhat offended by the use of some good metal crown that will remain for twenty years.—*W. N. Morrison, Dental Review*.

Low Fusible Metal.—Dr. R. Matthews makes a low fusible metal which melts below the boiling point of water and is very hard. It is composed of forty-eight parts of bismuth, thirteen of cadmium, and nineteen of tin. It melts at so low a temperature that it can be packed with the fingers. A common plaster impression can be taken to the laboratory and poured at once without waiting to dry,—can even be poured in water. For counter-dies he had used common modeling com-

pound. He softens and places it in a ladle, and places the die on it and drives it with a plunger and hammer; then places the plate on the model and swedges in the counter die after it gets hard. Do this three or four times. But this will not draw it close enough; so he will now use shot in the later part of the process, as has been suggested.—*Cosmos*.

Cataphoresis.—In regard to cataphoresis a few things are desirable. The current must be constant; it must not change, or there will be a shock, so the moisture must be kept regular. Then it must be applied gradually at first, and then raised as seems to be required. The Edison or a galvanic current are the best. The anodes must be held perfectly quiet. The sensibilities of the patient are so delicate that the pulse of the operator can often be felt. Then the enamel is not a good conductor, but acts like glass or porcelain. The dentine must be laid bare to the last tubule, for it is through the moisture of the tubuli the current flows. Every tubule must be exposed or it will remain sensitive. The cocain must reach the pulp through the tubuli, or their sensitiveness will not be allayed. Then all metals must be kept isolated. The clamp must be kept away, or it will carry off and waste the current.—*L. E. Custer, Cosmos*.

Treatment of Blennorrhea Gingivæ.—The treatment of the conditions referred to is often accompanied with slight results if the edge of the gum only is destroyed. Exact care of the mouth, removal of the slime, cauterizations with chloride of zinc, sublimate, nitrate of silver, rinsings with hydro-super-oxyd 10 in 100 are indicated. Very difficult to cure—indeed by many held to be incurable—is blennorrhea. This is partly caused by the fact that persons who have allowed conditions to reach such a pass, even with the best intention to take care of the mouth, have nevertheless committed faults enough because they lack a knowledge of the cleanliness required in a case of this kind. If this cleanliness, however, can be brought about by instruction, and in other respects the disease receives careful local treatment, conclusive results may yet be obtained.—*Dr. Klingelhofer, Ash's Quarterly*.

EDITOR'S NOTES.

Will Give Proper Credit.

THE following letter, received from Dr. T. B. Welch, editor of the *Items of Interest*, is self-explanatory, and puts an end to

our controversy regarding the giving of proper credit to authors and journals for material copied :

VINELAND, N. J., August 11th, 1896.

FRIEND BETHEL:—I give up. It is evidently the general opinions of our respected exchanges that, even in short items, we give credit to both author and journal. I will, therefore, make this my custom.

Respectfully,

T. B. WELCH.

We are pleased to know that Dr. Welch has seen his mistake and is willing to acknowledge it. What we have said has been regarding objectionable methods and not to make a personal attack, for personally we have always regarded Brother Welch with great esteem.

SOCIETIES.

American Dental Association.

At the meeting of this Society at Saratoga, August 4-7, 1896, the following officers were elected for the ensuing year :

President: James Truman, Philadelphia; First Vice President: Thos. Fillebrown, Boston; Second Vice President: W. R. Clifton, Waco, Texas; Recording Secretary: G. H. Cushing, Chicago; Corresponding Secretary: Emma Eames Chase, St. Louis; Treasurer: H. W. Morgan, Nashville.

A joint meeting will be held with the Southern Society at Old Point Comfort, Va., on the first Tuesday in August, 1897.

Southern Dental Association.

THE following officers were elected for the coming year :

Dr. W. H. Richards, Knoxville, Tenn., President; Dr. E. P. Beadles, Danville, Va., First Vice President; Dr. A. P. Johnston, Anderson, S. C., Second Vice President; Dr. F. P. Welch, Pensacola, Fla., Third Vice President; Dr. D. B. Brabson, Knoxville, Tenn., Treasurer; Dr. C. L. Alexander, Charlotte, N. C., Corresponding Secretary; Dr. S. W. Foster, Atlanta, Ga., Recording Secretary.

THE OHIO DENTAL JOURNAL.

VOL. XVI.

OCTOBER, 1896.

No. 10.

CONTRIBUTIONS.

The Edison Current in Cataphoresis.

BY L. E. CUSTER, B.S., D.D.S., DAYTON, O.

IN a former paper on cataphoresis read before the Mississippi Valley Dental Society it was stated that the 110 volt Edison current was as good for cataphoric purposes as a battery current, and it was recommended on account of the convenience. That statement was made from the practical experience in the use of the current as supplied in Dayton, O. Since that time the writer has had occasion to operate with a variety of commercial currents throughout the country. In Marshalltown, Iowa, the 500 volt current was used, but in all the other instances the 110 volt Edison. The experience with some of the currents was so different from that at Dayton that I was at a loss for a satisfactory explanation. In some there was so much pain in the application of the current that the operation could not be called a success so far as being painless was concerned. When the appliances were perfectly quiet the patient would from time to time experience sudden and severe shocks of pain, much as if the current had been broken.

It was also shown in the paper that to produce cataphoresis painlessly the current pressure when supplied by either a dynamo or battery, must be steadily maintained. It will not do to sud-

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denly raise or lower the voltage on the main of the street current. Neither is it allowable to cut in or out a cell or a number of cells of a battery. By my experience with the various currents I was led to suspect that in those instances where there was this periodic pain to the patient that there must be a sudden and wide variation in the voltage, although this did not show itself upon the volt meter by more than a slight movement of the index finger. Subsequent observation and experimentation has practically substantiated the above belief, and I feel safe in saying that in those instances where operators are using the 110 volt current with intermittent pain to the patient, the anode being held quiet, that it is due to a fluctuation in the pressure of the main current. The fluctuation is usually a lowering of the voltage and so quickly done that it is not noticeable on the ordinary voltmeters in use. It is not a drop of a few volts but of quite a number, possibly of 20 or 30 at times.

The Edison constant current, the most practical form of commercial current to use for cataphoresis, is furnished us at a pressure of about 110 volts. This current, as is well known, is produced by the rotation of an armature between the poles of an electromagnet. In order to maintain 110 volts the armature must rotate at a given speed, the armature must have a certain number of windings and there must be a certain magnetic flux. If any of the above three conditions should vary there will be a variation in the voltage of the outgoing current. It is by means of the last named that the voltage is most commonly controlled, or rather maintained, because it can be done by means of the rheostat. It is not practical to vary the speed of the engine, or is it practical to change the windings of the dynamo, but the magnetism of the field can be easily varied by an instrument in common use, the rheostat. In a large plant where the manufacture and consumption of current is large, as for instance a city plant, where a number of dynamos are feeding into common mains and where the output is always large, the cutting in or out of current for a building, or perhaps for a whole square, is scarcely noticeable, and the average voltage is easily and carefully maintained, whereas in small plants which supply but a building, or but a few at most, often with imperfect regulators and inefficient attendance, the variation in voltage is much more marked. The voltage of a city plant may vary 5 or 8 volts during the day but this

variation has been going on very gradually. But in the smaller plants the variation comes on instantly.

When a dynamo has once been placed in operation, its armature is expected to revolve at a certain speed at all times in order to produce and maintain a steady voltage. An increase in the armature revolutions raises the voltage and a decrease lowers the voltage. It is necessary to increase the belt pull on the armature as the output of current is increased. It is not simply a matter of revolving the weight of the armature on its axis against the air friction and the friction of its bearings, but as the load or output increases magnetism also increases and the armature becomes a dead weight, like revolving a fan in a vessel of water, and as the output still further increases the water theoretically begins to thicken. Now this is a dead weight and if the belt pull were to suddenly cease, the armature, whose momentum is neutralized by the magnetism would stop. If it would not entirely stop, it would at least lessen its speed very considerably. This all occurs so quickly that the eye cannot perceive it and the ordinary volt meter index has not had time to record it. All that is noticeable to the eye is a slight movement of the index finger. Now if this current were used for cataphoresis at the time of this sudden drop of the voltage, which is not measured on the meter, it is very distinctly felt by the patient, because it would be practically the same thing as lifting the anode from the tooth. In a large plant where a number of dynamos are feeding into the same lines, the slipping of a belt on one is scarcely noticeable, but in a small plant this is certainly the case.

A frequent cause of the variation of voltage in small plants is that the engines and dynamos are often too small for the work put upon them. No engine can run smoothly when it is always put to its highest limit. It is the one that has reserve that can be regulated to meet the varying demands. A still less satisfactory source, so far as steady pressure is concerned, is the gas engine. While this is especially adapted for small plants, the smaller the engine the more unsteady is the electrical output.

Another cause of variation in voltage is found where the dentist does not get his current direct from the main line or is quite near some person who is using current from the same wires periodically. In many large buildings the wires enter the basement and ramify throughout the entire structure, giving off

branches to each floor and these in turn to the different suites. Perhaps the elevators are operated from the same wires. It is a commonly observed fact that if a lamp is steadily burning and another near by be turned on, if the conductors are small, the first lamp is seen to slightly dim. The same thing occurs when the operator is producing cataphoresis and a neighbor turns on or shuts off current for his engine, lamp or oven.

The current used for lighting is always consumed at a steady rate and mostly at night, but that for motors is periodic and it is unfortunate that this is during the daytime and when the dentist operates his cataphoric appliance. For this reason it is also important that the dentist secure his current from the main lines if possible.

Occasionally the Edison wires are crossed by the trolley. If there are no grounds on the dentist's line, nothing further than a small raise in the voltage will be noticeable and but a slight shock is felt by the patient; but should his wires be in contact with a water or gas pipe the results would be more serious. On a well kept system the heavy voltage is immediately dissipated in the many outlets and nothing serious will result.

The practical conclusion to be drawn are these. The 110 volt Edison current may be used satisfactorily and with as good results as a battery current where it is furnished by a well equipped and not overloaded plant. The dentist should connect direct to the main line whenever possible and not use current for other purposes while producing cataphoresis. He should not be on the same circuit with large motors which operate intermittently and should see that his wiring is perfectly insulated and not in danger of a ground.

Partial Bite-Plates.

BY W. A. STORER HOW, D.D.S., PHILADELPHIA.

THERE is a class of cases in which the provision of partial dentures embracing only molars and bicuspid tasks the skill of the prosthetician in no slight degree.

This is especially true in the construction of bridge dentures which are to span places between molars and bicuspid or molars

and cuspids. For the convenient taking of impressions for these dentures Dr. H. H. Burchard has designed two suitable trays,

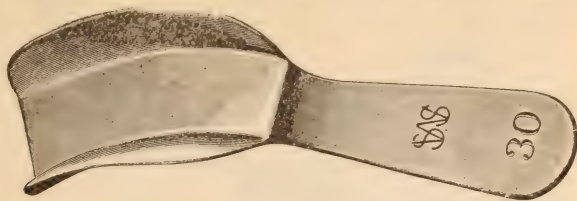


FIG. 1.

Figs. 1 and 2, which have dual functions; that shown by Fig. 1 serving for either the upper left or the lower right side, while that illustrated by Fig. 2 may be used for either the upper right or the lower left side, as the case may require.

By no means the least of the difficulties encountered by the dentist is found in the subsequent taking of the bite, and incidentally

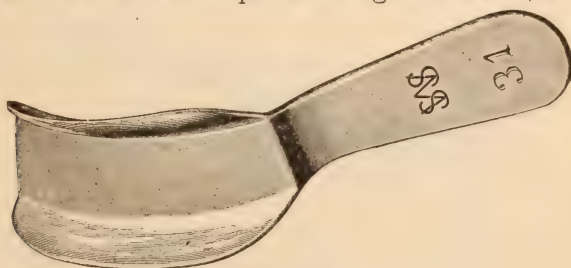


FIG. 2.

tally there has commonly been for both patient and prosthetician the loss of time involved in the necessity for a second sitting to secure a correct bite.

The desire to overcome these difficulties has induced the writer to supplement his true bite-plate series with the novel forms shown in Figs. 3 and 4. Like the new impression trays, these bite-plates are adapted for interchangeable uses: Fig. 3 for

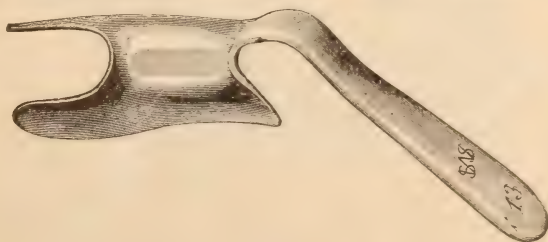


FIG. 3.

the lower left or the upper right side, and Fig. 4 for the upper left or the lower right side.



FIG. 4.

For example, a case may be taken in which only the third molar and the first bicuspid with the oral teeth of the lower right side remain. Immediately after taking the impression with the Fig. 2 tray, the bite-plate Fig. 3 is to be tried in the mouth and, if necessary, trimmed or bent to rest loosely on the gums between



FIG. 5.

the lower and right third molar and first bicuspid. The teeth are then occluded to make evident the non-impingement of the upper teeth upon the bite-plate at any point.

Some thin warmed wax is to be placed on the under side of the warmed bite-plate, which is then pressed into place as shown in Fig. 5, and the teeth again brought together to be sure that they do not strike the bite-plate.

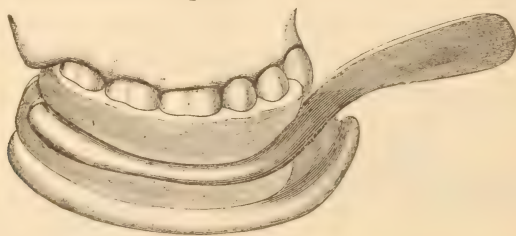


FIG. 6.

A sufficiently large roll of warmed wax is then placed on the *dry* bite-plate between the molar and bicuspid, and the upper

teeth carefully closed upon and into it, as in Fig. 6. While the teeth remain closed, finger pressure on the buccal aspect of the wax will ensure its conformation to the buccal surfaces of the



FIG. 7.

teeth. A careful removal of the plate from the widely opened mouth will disclose a perfect bite, as in Fig. 7, which should at once be immersed in cold water and kept there until a plaster model shall have been made from the impression. The bite-plate and bite may then be judiciously placed on the model and both transferred to the articulator, with the result shown in Fig. 8. The like process is pursued in obtaining the bite at the original

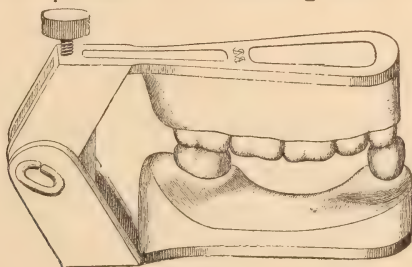


FIG. 8.

sitting for the impression in any similar case, whether the space to be filled is located above or below on either side. If the space extends only between, say the second molar and first bicuspid, the bite-plate may easily be made to fit by cutting away the posterior molar part with plate nippers or a vulcanite file, as shown in Figs. 9 or 10.

The anterior or bicuspid part need seldom be changed, but in



FIG. 9.

every instance the bite-plate should be tried in, and the upper teeth be closed to be sure that they do not touch the bite plate. The handle can easily be bent laterally to meet any indication. The thin sides may be readily flared by hand-pressure over a



FIG. 10.

smooth round wood handle to widen any part of the bite-plate to suit a special case. The ends and edges of the sides can be trimmed off to suit flat gum ridges or close bites; the bite-plates in form and amplitude of thin metal, having been made with a carefully considered design to provide for facile adaptations to the exigencies of prosthetic practice in this class of cases. The hope is ventured that the endeavor will meet corresponding professional approval.

Diseased Antrum.

BY E. H. RAFFENSPERGER, D.D.S., MARION, OHIO.

To the average dentist the antrum of Highmore is an unknown region: he knows there is such a place, that it is somewhere in the head, but just exactly where he is not quite certain. A great many physicians are equally as well posted, and strange as it may seem, it is nevertheless true, that greater ignorance concerning the antrum is found among the physicians than the dentists, and many of the former are treating cases of nasal catarrh which are simply cases of diseased antrum.

This fact was impressed upon me several weeks ago by the following interesting case.

Mrs. V., aged about fifty years, was sent to me from a neighboring town for examination, with the following history: Three years before had the "grippe," and since that time has been constantly treated for catarrh, with no good results. She complained of her left superior maxilla, cheek slightly swollen, inflamed and tender, severe shooting pains over the left side of the face and head, and a constant discharge of

very offensive matter from the left nostril, especially when lying on the right side. The discharge also ran back into the posterior nares, causing a constant hacking cough and spitting of offensive matter, making life a burden to herself and friends.

Examination showed slight swelling over the canine fossa, which yielded to pressure. The teeth on left side were all missing except the first bicuspid, which was sound and not tender to the touch. The left eye seemed slightly larger than the right, as though it was pushed out from the socket. The mucous membrane of the left nostril was badly excoriated, as though it had been burned. The discharge from the left side was very offensive also, but no odor from the right nostril.

I diagnosed the case as one of muco-purulent secretion and engorgement of the maxillary sinus, possibly induced by the attack of grippe as before stated.

My treatment in the case was to extract the first bicuspid, and with a Gates Glidden drill, I began at the bottom of the socket of the first bicuspid and made a small opening into the antrum by drilling upwards and backwards through the bone until the cavity was reached. I then enlarged the opening with a "Younger Root Reamer." No matter as yet made its appearance, though a free opening was made into the cavity, but on injecting warm water through the opening over an ounce of very thick offensive mucus was forced out through the nostril. After repeated washings with warm water and listerine, I flooded the cavity with a six grain to the ounce solution of zinc chloride. This was repeated twice daily for one week, when marked improvement was noticed. Then every other day, for a week, and finally only once a week. I had a silver drainage tube inserted, but owing to the pain it caused, removed it. I have not seen the case now for several days. The character of the discharge has changed. It is now very "watery" and has no offensive odor, and the swelling on the cheek has all gone away and there is no pain, so I am in hopes the patient will suffer no more trouble from it.

By way of caution to any of my readers who may have a similar case, I would suggest a syringe with a soft rubber nozzle or point, as the insertion of the point was very painful. And a word about peroxid of hydrogen: I found in this case it caused much pain, or as the patient expressed it, "made her head feel like it was going to bust."

Use of the Alcohol Lamp.

BY W. H. BROWN, D.D.S., NASHVILLE, TENN.

IMPURE alcohol is not, by any means, the only thing which causes trouble during the process of making contour fillings, yet it is true that impure alcohol is detrimental to good gold work. By following the instructions given below, I believe you will have less trouble with the lamp.

First, see that your lamp is perfectly clean, both inside and around the top of burner. Be sure there is no wax or any kind of chemicals dropped from your instruments and lodged on or around the wick. Next see that the wick is freshly trimmed and no crust left from previous burning. After you are satisfied that your lamp is perfectly clean, inside and out, fill up with pure alcohol, and never attempt to work with a half filled lamp, for by so doing the blaze will consume so much wick, causing a certain amount of smoke, which renders the blaze unfit for annealing purposes the same as impure alcohol.

Another thing which should not be overlooked is, after lighting your lamp do not use the blaze too soon, give it time to heat and burn off all impurities and become a blue blaze before annealing your gold. While waiting for this, it is a good idea to select the pluggers you expect to employ and warm them slightly at the points. This not only prevents the cold instrument from chilling the gold, but burns off all the impurities and foreign substance that may have collected in the serrations.

Always be careful not to blow your breath against the filling or use the chip blower at any time during the operation. Either one will cause a dampness which will prevent the next piece of gold from adhering properly.

Misleading Items.

BY L. P. HASKELL.

SUCH items as the following from *Ash's Quarterly* are misleading :

"When backing a tooth, my plan is to countersink the back and rivet with a fine-edged hammer, supporting the tooth meanwhile on the edge of a piece of lead held in a vise. This I think better than splitting and spreading the pins, as some recommend, because the borax and solder are more easily kept from flowing through the back and fracturing the tooth."

After soldering teeth for fifty years I can simply say that the cracking of teeth is almost unknown. And as to the borax and solder flowing down the sides of the pins, causing teeth to crack, is all bosh.

My method has always been to *split* the pins so the solder *would* flow down through the hole thereby fastening the tooth more firmly.

The objections to *riveting* is that the solder flows *over* the head of the pin and after the facing is finished down thoroughly there is not much hold. Then there is the added danger of fracture in riveting.

Antiseptics.*

BY GEO. E. HUNT, D.D.S., INDIANAPOLIS, IND.

IN dentistry we find that antiseptics have grown steadily in their usefulness as our knowledge of their practicability has increased, until now scarcely a patient leaves our chair without having been subjected to the use of an antiseptic in one form or another.

There are several practical uses of these agents, the importance of which have been largely overlooked by many who are staunch supporters of antiseptics, and it is to these I desire to call your attention.

A mouth-wash is almost, if not quite, as important a component to one's toilet as any tooth powder, yet how seldom do we find such an article even in the possession of our most particular patients, and why is this?

It is either because the patients are ignorant of its value or because they willfully neglect their teeth. In any case the fault is largely our own, and may be ascribed to the fact that we either do not sufficiently urge upon our patients the importance of this valuable prophylactic measure, or because we underrate it ourselves.

* Read before the Indiana State Dental Society, Indianapolis, Ind., June 30, 1896.

The education of our patients is a subject in itself, and an important one, too, but we shall not encroach upon it except in so far as it treats of mouth-washes; of what they should consist, and when and how used, associated intimately, as it is with the subject in hand.

You will observe that I have taken the liberty of assuming that we are all agreed upon the therapeutical merits of mouth-washes; hence we will not stop to consider the subject in this light.

In the first place, we should give each and every patient to understand that if he desires to preserve his teeth he should provide himself with a mouth-wash and use it regularly and liberally.

The ideal mouth-wash should possess these essential properties: antiseptic, alkaline, deodorant, somewhat astringent, yet entirely agreeable to the senses of taste and smell. Antiseptic, to arrest fermentation existing through presence of particles of food which remain lodged between and about the teeth; alkaline, in order to neutralize any acidity—the presence of which is so destructive to tooth-structure; deodorant, that any existing odor arising from fermentation, the use of tobacco, etc., may be destroyed or at least modified, thereby rendering the breath inoffensive. The astringent property of a mouth-wash should not exist in a marked degree, just sufficiently to assist in preserving a healthful condition of the gums and mucous membrane.

By combining a pleasant taste and fragrance to the preparation you endow it with properties which assist, perhaps, more than its real prophylactic worth in influencing patients to use it regularly.

Preparations known as antiseptic mouth-washes are numerous, and, like those for the relief of all the ailments to which flesh is heir, there are many which do not meet the requirements for which they are intended, while some have been proven to possess great practical therapeutical value.

Recommend to your patients a preparation, the merits of which you are thoroughly familiar with, or furnish them with a prescription composed of ingredients carefully selected to meet the requirements of the case.

The most essential time to use a mouth-wash is just before retiring. At this time the teeth should be properly cleansed by

the use of the brush, the wash, properly diluted, furnishing the liquid with which the brush is saturated. After the use of the brush the mouth should be thoroughly rinsed with the wash. Patients should understand that there is no such thing as the abuse of a desirable wash, and that the mouth-wash habit, if such an expression is allowable, is a thoroughly desirable one, since cleanliness is next to godliness.

The importance of using preparations which are agreeable to the senses should not be lost sight of. All preparations used about the mouth, whether by injection or as a wash, gargle, or even for local application, should possess these qualities. Our aim is to please, and pleasing signifies the creation of a favorable impression. We must save ourselves the embarrassment incident to unfavorable impressions arising from neglect of this small item.

The accomplishment of the desired end is within the grasp of all who will give it a little study. The addition of one of the balsamic agents to an otherwise offensive preparation will be accompanied with satisfaction to both patient and practitioner.

We should have on hand, for general use, an antiseptic which by different degrees of dilution will fulfill the requirements such as the term "general use" signifies, though we should in nowise look upon it as a "cure-all," since so many cases require special attention.

THE DISINFECTION OF INSTRUMENTS.

Many of us seem to feel that we have fulfilled all that the laws of hygiene and prophylaxis require when we see that our instruments are carefully wiped with a clean cloth or napkin, or perhaps dipped into water and then wiped dry. This may, and perhaps does, remove all visible stains and dirt, but we must remember that in all probability many germs remain upon their surfaces. Certainly the vast majority of these germs or micro-organisms are harmless, but on the other hand, those same instruments which have been replaced in your cabinet, supposedly clean and ready for use, may be infested with micro-organisms of the most infectious character. What an unpardonable crime it would be to affect a poor, unsuspecting patient with syphilis, for instance, through neglect of this sort when so convenient and sure a safeguard is at hand.

This safeguard should consist of a strong antiseptic solution, the active ingredients of which will not deteriorate by long standing. Bichloride of mercury corrodes steel, and therefore is not available for this purpose.

Here is another use for your general antiseptic previously referred to. Have at hand a vessel (a finger bowl is entirely suitable) containing your solution, and at the conclusion of each operation, irrespective of the social standing or general character of the preceding or succeeding patient, see that each instrument used is carefully immersed in this solution.

Closely allied to this prophylactic measure is the attention given our hands before introducing them into the patient's mouth. Considering that our hands are almost constantly within observation, it is apparent that it behooves us to be particular regarding their appearance. While it might not be especially observed that they are clean, it would certainly be noticed that they are *not*, if such be the case. In reality we have not done our duty entirely when we present ourselves with clean hands; they, too, should be disinfected.

Previous to beginning an operation, and preferably within view of the patient, the hands should be thoroughly washed with soap and water. A nail brush should be freely used in this connection. After all signs of stain and dirt have been removed, the hands should be carefully dried, and following this immersed in an antiseptic solution. To this add the cleaning of the nails and the use of a spray of toilet water from your atomizer, and you may go before your patient feeling that you have protected him (and yourself), against the danger of infection according to the most approved methods. It may be argued that the end does not justify the means, for to be sure the pursuance of this plan means an apparently unnecessary expenditure of time in many instances, but one only needs to draw a picture in one's imagination of a ruined and sacrificed life resulting from his neglect in disinfecting instruments or hands, to feel that the time consumed is fully compensated for by an amount of personal satisfaction derived from the knowledge that such a misfortune had not come to him on this account.

If we aspire to be "up to date" in our profession we must avail ourselves of "up to date" methods, and this is one of them. The surgeon of to-day spares no pains in fulfilling every detail

which comes within the category of antiseptic precaution. So we, as dental surgeons, must practice in the same channel if we are specialists in medicine.

The future of antiseptics can hardly be over estimated since we have come into a full knowledge of their true value. Their prophylactic worth is not sufficiently understood by the public generally, and it remains for us to distribute such knowledge upon all sides. By so doing, and not until then, do we fulfill our duty to humanity.

The Lingual Wall.*

BY E. P. BEADLES, D.D.S., DANVILLE, VA.

THE thing we do most, day in and day out, is the operation for preventing caries or checking that destructive disease. Our utmost skill is exerted to save not only the substance but the good appearance of the most important teeth, the superior incisors and cuspids. To accomplish this object, I have for ten years pursued a method which has proven in my hands satisfactory in every way. The work is done with ease to myself and with comfort to my patients—in a word, the lingual wall is almost invariably removed. This wall is, in the majority of cases, thin and weak, the gold cannot successfully be packed against it; it is liable to crack or break, subsequently. Another important reason for its removal is that much less separation is required as, with this wall removed, the entire cavity is exposed to view by the use of the mirror.

Under the most favorable circumstances this wall may be retained, where I usually make a compound filling of gold and cement, the cement being placed in somewhat soft, and as many pieces as possible of annealed gold being pressed into the cement. After the cement has hardened the filling is completed with gold. This is especially to be commended when the labial enamel wall is thin, as it prevents the gold from showing through.

With the lingual wall removed, with the aid of the mirror, each piece of gold may be carried to its place with perfect precision and packed against the walls with certainty, the cervical

* Abstract of paper read before the Southern Dental Association, Asheville, N. C., July, 1896.

wall receiving attention first, which must be well covered and the gold well burnished before proceeding further. I use hand-pressure almost exclusively in these cases; I see no room nor need of mechanical mallets—the patient may sleep under the gentle but strong pressure of the hand.

Every man is wedded to his own method; this is mine and I believe in it.

ABSTRACT OF DISCUSSION.

DR. BEADLES added: Nearly every man has his hobby; this is mine. I find that in this way, I operate without any difficulty and there is much comfort to me in it. I never get tired. To those who are not wedded to any special method I say *try this*; Cut away the lingual wall and use the mouth mirror. Try my method. You will not regret it.

DR. V. E. TURNER, Raleigh, N. C.—I am surprised that so few men have adopted this method. The mouth mirror is my hobby. I use it a great deal; in fact, all cavities that are not plainly in view I fill with the aid of the mirror, and much of the work I never see with the unaided eye.

It aids in the preservation of health, enabling you to maintain an erect position, instead of bending and stooping in cramped, inconvenient positions, in order to get a direct view of the cavity. It is a great comfort to me to be able to stand perfectly erect, day after day, and my work is made less fatiguing. It is of great importance to the dentist to pay due regard to the preservation of his health. As a man grows older his judgment has matured, he is more accurate and should then have reached the most useful time of his life; he should pay due regard to the preservation of his health that he may be able to utilize the advantages gained by experience.

Pulp Physiognomy.*

BY DR. WM. H. RICHARDS, KNOXVILLE, TENN.

HE said he had been engaged in a line of original work, and had expected to lecture on certain stereopticon slides which he had prepared, illustrating his subject, but that having been dis-

* A Talk before the Southern Dental Association, July, 1896.

appointed in the promised lantern was obliged to let it go by.

Being urged to continue, Dr. Richards said:

The work is of such a character that it would be difficult to place it before you simply by description, though I have some photographs which will assist you to gain some conception of what I am doing. I had prepared forty-five slides, which I expected to be able to show you.

My work is the study, by a new method, of the space in the tooth occupied by the pulp tissue in all of its ramifications.

By the usual method of study the tooth is cut down through the median line, showing the interior of the pulp chamber, and more or less of the root canals. Sections are also made in different planes, but cut the tooth as you please you cannot show, in one view, all of the space occupied by the pulp tissue. But to get a clear conception of all the organic tissue occupying all portions of a tooth, many slides are required; layer after layer must be cut infinitesimally thin, and even then it is difficult to conceive the relation of the different parts to each other and to the whole. Now, in my work, I do nothing of that kind. I place before you an exact counterpart of the organic contents of the internal cavity of the tooth, with all the peculiar features of the space occupied by that tissue. Briefly stated, I clean out all the organic matter from the cavities within the tooth, going out through the foramina. I then proceed to fill all that space with formalin-gelatin preparation, under great pressure. It soon hardens and I then dissolve away the outer shell of inorganic tooth structure and leave standing a reproduction in form of the pulp of the tooth; an exact counterpart, standing up like a little branching bush, with all the peculiarities of outline it may have had.

These photographs will give you a clearer idea of what I mean. My studies in this line, and my work as described, have shown me some things that, as far as I know, have not before been brought to light.

At the close of his talk, Dr. Richards' photographs of these *pulp counterparts* were passed around and examined with great interest, many novel and unexpected features in pulp formation being clearly revealed.

The Orbicularis Oris and the Muscles of Expression.*

BY W. C. BARRETT, M.D., D.D.S., BUFFALO, N. Y.

... WE, as dentists, know the marvelous modifications that can be brought about through a change in the position of the teeth. We have witnessed the complete mutilation that has been caused by the insertion of an unskilfully constructed artificial denture. I could not, then, select a subject that should more directly appeal to those who are constantly engaged in working upon the human face, than to present before them a brief study of one of these expressive organs.

The orbicularis oris is the most complicated and involved of the muscles of the human body, whether we consider it from its anatomical or functional aspect. It is commonly considered a sphincter, but it is very far removed from this class in that none of its fibers are continuous about the cavity which it surrounds. It is not a simple muscle, but it is made up by the intermingling and intercommunicating of a large number of facial muscles. In fact, the distinctive fibers of the orbicularis are comparatively few, passing only across the lips, and not around them. The compression of the mouth is not even produced as in the eye, in which the orbicularis palpebrarum passes nearly around. The mouth cannot be completely pursed up as with a true sphincter, but it can be drawn together by the combined action of a considerable number of muscles. Its expressiveness is not produced by a simple muscular action, nor can any of the passions be portrayed by any one set of fibers. The marvelous changes are brought about by combinations made possible through the intercommunication already referred to.

The orbicularis oris is the common meeting ground of all the muscles of facial expression. Fibers from each and every one of them communicate, either primarily or secondarily, with the true orbicular fibers. Even the muscular portion of such a distant one as the occipito-frontalis has its means of communication, and from the clavicle to the coronal suture there is a functional union of all the expressive muscles of the face and head. The mingling of the fibers of all these muscles makes the

* Abstract of paper read before the American Dental Association, Saratoga, Aug., 1896.

structure of the orbicularis very complex. Muscles like the depressors and levators, the filaments of which are arranged at right angles to the margins of the lips, crossing it, give vertical fibers. Those of the buccinator, risorius, etc., added to the longitudinal fibers of the orbicularis proper, furnish transverse filaments, while a third set run diagonally across, obliquely between the other bundles, from before backward, and from the skin to the internal mucous membrane.

The deep portion has but a restricted attachment to the bone beneath, that of the upper lip having the naso-labial slips, which give the prominence that forms the two vertical ridges near its center, dropping down from the cartilage of the nose, and another in the incisive fossa, while that of the lower lip is merely attached at the incisive fossa on each side. The superficial part of the muscle has no bony attachment whatever, but is held in position by the diverging muscles of which it is composed. This gives extreme mobility to the whole mouth, the lack of bony attachment accentuating it, for if the superficial fibers are strongly contracted and the diagonal ones relaxed, the lips are protruded, while if the deeper layers and the oblique ones are contracted the lips are drawn against the teeth. . . .

It is not, however, the anatomy of those muscles that so much interests us as their function, and I desire to indicate in what way the expression of the countenance may be affected by malpositions of the teeth, or by unskilful operations on the part of the dentist.

First let us consider the levator-labii-superioris-*alæque nasi*. The action of this muscle is to raise and slightly evert the inner half of the lip, and at the same time to lift the wing of the nose, and it produces an expression of disgust. It is especially used in sneering. In certain instances in which the central incisors are especially prominent while the laterals are retracted, we have that peculiarly impudent and deriding aspect that is sometimes called the squirrel or "rat face." If an artificial plate be too prominent beneath it, there may be produced the vacant, idiotic look induced by the compression of the oblique fibers of the orbicularis oris, and the consequent eversion of the labial edge.

A little nearer the angle of the lips and above the canine teeth, but upon the superficial labial surface, lies the levator-labii proprius. The action of this muscle is quite complex. With the

levator-labii-superioris-alæque nasi it raises the lip, everts it somewhat, and gives a peculiar sneering expression to the countenance. The carnivora in snarling bring this muscle into play and thus expose the canine teeth. In connection with the depressor-anguli-oris, or triangularis-menti, and the orbicularis-palpebrarum, it is especially used in crying. The closure of the eye by the contraction of the latter muscle assists in raising the lip, while the triangularis-menti draws the mouth into the shape of a parallelogram, and gives a peculiarly lugubrious expression to the face. If the cuspids be unduly prominent, or if a plate lifts the muscle too much, the consequence may be, when the other muscles are at rest, a permanent sneer. With the contraction of the orbicularis-palpebrarum and the triangularis-menti, the face has an expression of extreme sadness.

The buccinator as a muscle of expression acts secondarily. From the peculiar direction of its fibers, when it is in contraction the muscles of the deep layer are pursed up at the corners of the mouth, while those of the more superficial layer are peculiarly puckered by the consequent drawing of the levator and depressor anguli-oris. A deep wrinkle is seen at the angle, while the risorius is placed upon a stretch, and an insincere and mocking expression is the result. This will be induced when an artificial denture is inserted that has no depression at the canine fossa. The superior decussating fibers of the buccinator are placed upon a stretch, and a peculiarly disagreeable expression thereby induced. The same abnormality of the natural denture, or the same improperly constructed artificial plate that thus unduly distends the buccinator, will act upon the levator-anguli-oris and intensify the disfigurement. This muscle raises the corner of the mouth and at the same time draws it inward. When too much distended there must be a continued muscular effort on the part of the triangularis-menti to keep the corners of the lips in place, and this results in a painfully strained appearance and adds to the distortion.

The zygomatici, major and minor, are the muscles most used in smiling, as they draw the angle of the mouth upward and outward. When the zygomaticus major is strongly contracted it draws together the tissue about the point of its origin and causes a fullness in front of the malar bone. If now the orbicularis-palpebrarum be contracted, the tissue between the origin of the

zygomaticus and the outer canthus of the eye is peculiarly wrinkled, producing what are called "crow's feet," a disfigurement which ladies especially most earnestly desire to avoid. If both zygomatici are placed upon a stretch by undue distention, the mouth is placed upon a broad grin. If, on the other hand, they are unduly relaxed, the triangularis-menti draws down the corners of the mouth, and gives the opposite expression.

The risorius has its origin in the masseter, and its action is to draw the corners of the mouth directly outward. It gets its name from the former supposition, that it was the muscle of laughter, but all the late anatomists know that this was a mistake. When it is contracted it gives an expression of pain. This is the case in tetanus, and the appearance in that condition is hence called the risus sardonicus. If the first molar in either the natural or an artificial denture be placed either within or without the proper position, the risorius may be caused to give a very peculiar and painful expression.

The platysma-myoides is not as much affected by the dentition as some of the other muscles. Yet there are few whose action is more complex. Arising as it does from the deep fascia of the upper part of the chest and neck, it is involved in all of the muscular movements of the important pectoralis-major, the deltoid and the sterno cleido-mastoid. Its long bundles of fibers continue to the border of the jaw, where some of them are inserted. But others cross the lower jaw, and continuing beneath the triangularis and the quadratus menti, are lost in the orbicularis oris, while the fibers crossing the angles of the mouth are mingled with and lost in the fibers of the levator-labii-propius and the levator-labii-superioris-alæque-nasi. Hence any unusual exertion of the pectoralis and the deltoid exhibits itself in the face. In heavy lifting the corners of the lips are drawn down, and even the wing of the nose depressed by the strain placed upon the platysma, through its origin in the fascia of the muscles of the arm and chest, and its connection with the orbicularis-oris and the levator-alæ-nasi. It cannot then be lost sight of in arranging the teeth, and its action upon the orbicularis-oris needs careful study by the artistic dentist.

The depressor-anguli-oris is of course affected by anything that unduly contracts the levator-anguli-oris and the zygomatici. If, on the other hand, these muscles are left too lax, the depressor,

or the triangularis-menti draws the mouth out of position. If the lower teeth are too prominent, or if an inferior artificial denture placed these muscles upon a stretch, it may be easily seen that not only will the symmetry and proper expression of the lower lip be destroyed, but that the opposing muscles of the upper lip will draw that also out of place. Especially must the natural depression of the canine fossa be retained, that the triangularis-menti may not be distorted, and so the natural expression be entirely lost.

A very disagreeable fullness of the lower lip may be induced if an artificial plate too much distends the quadratus-menti, or the depressed inferioris and the levator-menti; or levator-labi-inferioris. If the latter, especially, be strained by undue fullness near the center of the lower lip, it induces a peculiarly haughty, supercilious expression, which may do the wearer of it great injustice. This appearance may be brought about by malposition of the teeth, irrespective of either the natural or the artificial alveolus. If, for instance, the lower edge of an inferior plate be too thick at the incisive fossa, the origin of the levator-menti, the point of the chin will be disagreeably drawn up. If now the teeth be placed too far back, the natural fullness of the orbicularis is not preserved, and the decussating fibers of the buccinator and those of the platysma will draw in the margin of the lip, and a peculiarly dogged, obstinate expression will be the consequence.

If a plate be too full at the canine fossa of the upper jaw, the levator-anguli-oris is distended and the corner of the mouth is raised, while at the same time the descending fibers of the buccinator draw up the inferior angle of the mouth, the risorius is pulled out of position, and a half-sneering, half-weeping expression is seen. At the same time the zygomatics may be relaxed by the lifting of the lip, and there will be a distortion of the tissues covering the malar bone. Hence, by an artificial denture that has an undue prominence at one point, every expression of the face may be changed, and not a muscle that is connected with the orbicularis-oris remain at rest in its natural state. . . .

Much time should be spent with each of the muscles whose action is in any way connected with that of the orbicularis oris, if we would thoroughly comprehend the matter. The dentist who constructs artificial teeth has in his keeping the making or marring of the whole human face. If he is not an anatomist,

and at the same time he has no artistic ideas, and if he does not as carefully as the sculptor study the face which he is endeavoring to idealize, he is unworthy a place among artistic dentists. When one sees the perverted, distorted, deformed features of some one who might have a pleasant expression; when children, perhaps, look upon a mother from whose hallowed image all the sweetness, and love, and patience, and tenderness have been eliminated by the cursed work of some pretender to knowledge of which he is in utter ignorance; when we reflect upon the blasted lives of young women whose future perhaps is wrecked through their being made repulsive to one who should have been attracted; when we observe upon the streets, in society, at home and abroad, the horrible caricatures of the human face divine that are the results of the reprehensible ignorance of pretended dentists, one wonders whether after all our profession as a whole brings more of good than evil upon mankind. When we think of what it might be, and of what it is, we are led to weep at the present status of the art of dentistry, and are consoled only by the remembrance that amid all the cheap-johns who are violently struggling for a bare existence, there are a few who do honor to their profession by conscientious and intelligent work, and who are rewarded, as such men always are, not only with the plaudits of a judicious world, but by the more substantial benefits of well paid labors.

Nodule on Apex of Root.*

BY H. L. AMBLER, M.D., D.D.S., CLEVELAND, O.

A LADY, aged about thirty, presented for treatment of a chronic abscess of right superior lateral incisor. Upon examination with a probe it was found that the labial wall of bone at the apex of the root had been destroyed. With the intention of scraping the apex and breaking up the sac, a small right-angled scoop was introduced and passed easily over and around the apex. Upon withdrawing it a small nodule of dentine or enamel about the size of an ordinary pinhead, was brought away. The abscess was treated with pyrozone four times at intervals of three days,

* Paper read before the American Dental Association, Saratoga, N. Y., Aug., 1896.

when the discharge ceased. Evidently the pulp had been dead for a long time, and the canal filled, as there were large mesial and distal fillings. The case was lost sight of for a year, and in the meantime she had this lateral, and also the right central, which was badly carious, extracted, and is now wearing an artificial denture.

The special interest attached to the case is the fact of finding a nodule at the *apex* of a root, especially of a *single-rooted* tooth.

Enamel nodules are small excrescences apparently consisting of enamel occasionally met with upon the roots of teeth. They are generally found upon multiple-rooted teeth, situated a little below the neck and often at the junction of the roots. On section they are found to consist of a cone of dentine covered with a rather thick layer of enamel, and often connected with the crown by enamel. Wedl says that "these nodules are the result of localized continuations of the development of the enamel between the already developed basal portion of the roots, and are produced by the strip of the enamel organ which has persisted longer than the rest." Smale shows the cut of one of these nodules on the apex of a *molar* root, and says they may be accounted for by a budding from the tissues concerned in the process of the formation of the tooth. Tomes shows a cut of a nodule situated on the *neck* of a *single-rooted* superior cuspid.

Cast Fillings and Bridge Abutments.*

BY DR. C. L. ALEXANDER, CHARLOTTE, N. C.

CAST-METAL fillings afford a method of restoring teeth that are too badly broken down by caries to be amenable to the usual methods of filling, and which are made with much greater ease to both operator and patient than the gold contour work which they may often be made to replace most advantageously. They also permit of saving labial walls of enamel which would be sacrificed in the usual methods of crowning. Cast abutments for bridgework can be utilized for badly reclining molars, avoiding the necessity of devitalizing living teeth or of mutilating the teeth to ream parallel walls as required for telescoping crowns.

* Abstract of paper read before the Southern Dental Association, Asheville, N. C., 1896.

By Dr. Alexander's method, platinum plate or foil, which has been rolled very thin between copper plates to destroy its elasticity, is burnished accurately to the surface of the prepared cavity, holes being drilled for retaining posts which are subsequently soldered to the matrix with pure gold. The filling is then contoured in wax and an articulation secured by allowing the patient to bite into it. It is then removed from the mouth and properly trimmed, pure gold is burnished over the entire surface with the exception of a suitable opening through which the wax is boiled out—20 or 22k gold solder is then fused into the matrix thus formed and the filling secured in position with cement.

Dr. Alexander's paper was illustrated by drawings showing this method as adapted to incisors, bicusps, and molars; also as used for bridge-abutments.

DISCUSSION.

DR. A. P. JOHNSTON, Anderson, S. C., feared there was no cement on the market that would stand the strain of service on such work as that shown by Dr. Alexander, especially for bridge abutments in much slanting molars. He would also fear creating pulp irritation by drilling the holes for retention posts in living teeth.

DR. G. J. FRIEDRICHS, New Orleans, La., thought this work, when it can be successfully accomplished, far preferable to an all gold surface, and an excellent substitute for the fatiguing and costly work of contour restoration.

DR. S. W. FOSTER, Atlanta, Ga., has had considerable experience in work of a character very similar to this, which he has called "laboratory fillings," concerning which he read a paper at Old Point Comfort two years ago. He has never had to replace but one and thinks cement is all right for retaining fillings of this character.

DR. J. Y. CRAWFORD, Nashville, Tenn., would not use a platinum matrix, except for a porcelain inlay. For a gold inlay he would prefer pure gold burnished to the surface of the cavity. For extensive fillings he preferred the method of Dr. G. V. I. Brown, namely, filling the cavity one-third full of wax before taking the impression. The wax to be replaced with cement into which the retaining posts of the inlay are inserted, thus diminish-

ing the bulk of metal in the inlay and giving a protecting body of cement next the pulp.

DR. C. E. KELLS, New Orleans, La., is not in favor of so much bridge-work, of which he sees very many failures, coming from all parts of the country. For one that he puts in, he refuses to put in forty-nine.

Cast fillings are an excellent expedient in difficult cases where it is impossible to keep the cavity dry enough for gold fillings, the only weak point being the cement.

The bridge-work of incompetent dentists has done more harm in the last few years than good dentists can repair in the next forty years.

DR. CRAWFORD said he would challenge the moral force of Dr. Kells' teachings concerning bridge work. He thought that if Dr. Kells refused to make forty-nine out of fifty bridges, he made at least forty-seven mistakes! A properly applied bridge will prolong the life of the teeth and as abutments rather than injure them. Properly constructed bridges will not only add to the comfort of the wearers, but will prolong life by the aid they afford to the proper mastication of food.

DR. H. E. BEACH, Clarksville, Tenn., wished to impress the importance of securing the proper direction of force in bridge-work, which must always be on a direct line with the axis of the roots of the teeth as abutments. This is a more important point than the strength of the cement used.

DR. CRAWFORD spoke at some length of recent developments in swaging metal plates directly upon the plaster die, and the marvellous results that can be secured. For lower plates nothing can equal an aluminum plate swaged over a plaster die (with rubber attachments). It goes in like a wafer, and produces no ulcerative absorption of the lower jaw.

For fitting crowns Dr. Crawford takes an accurate impression of the trimmed root and makes a metal die, on which all the work of fitting is done. When the crown is finished, let the patient wear it twelve or twenty-four hours, without cement, to ascertain that the occlusion, the fit at the cervical margin, etc., is correct. Then oil the metal die slightly, fill the crown with gutta-percha, warm it and slip it on and off the die, removing all excess of gutta-percha until you are sure you have just the right quantity left in the crown to fit accurately. Then warm it

again and place it on the root; the crown will go home perfectly and you will have saved your patient much annoyance and trouble.

DR. ALEXANDER prefers to smear the tooth with gutta-percha in chloroform and set the crown with cement.

Report of Committee on Custer Oven.*

YOUR committee appointed to investigate the claims respectively of Drs. Custer and Taggart, as to the priority of the invention of an electric oven for fusing porcelain, would respectfully submit the following report:

After a careful and impartial investigation of all the evidence obtainable, we find that the first practical and public demonstration of the electric oven for the fusing of porcelain continuous gum denture occurred in the office of Dr. L. P. Haskell, in the month of Oct., 1894. Dr. L. E. Custer using an electric oven of his own invention and construction, and did there and then fuse an upper case for Dr. Haskell. Furthermore, we find that Dr. Custer did fuse porcelain in the early part of 1889, by the use of electricity, while conducting some experiments with an electric gold annealer, thereby antedating any previous record on this subject. The committee believe that Dr. L. E. Custer was the first person to practically fuse porcelain in an electric oven and recommend that this association accord him that honor.

FRANK HOLLAND,

J. G. PALMER,

G. MOLYNEAUX,

Committee.

* Report at American Dental Association, Saratoga, Aug., 1896.

ALL SORTS.

Dental Caries During Pregnancy.

Regarding this subject Dr. H. F. Vandervoort has the following to say in the *Dental Register*:

“ In the case of pregnant females, I think the influences are directed from the exterior and interior both, and at the same time, it is said it is due to the neglect or a lack of attention at that time. That certainly has a great deal to do with it, but we find that the patients suffer from ocular trouble and numerous other nervous disorders, and while the condition generally excites a high nervous tension, or we might say, is very displeasing to the nervous system when the patient is easily excited and is troubled with nausea. Now we find a change in the oral secretions which furnishes a more suitable soil for the development of micro-organisms, and from lack of attention such as proper cleansing and use of a suitable mouth-wash the organisms have nothing to interfere with their progress of destruction, and from the nervous condition nature is weakened and is unable to protect the organs from within, it is thought by some that through the demands of the developing fetus the lime salts are abstracted from the teeth; this, however, I do not believe, for my knowledge of the histology of teeth does not show any place of absorbing the lime salts from them or how carried from the teeth to the fetus, it may be done, yet since the teeth need nutrition from the blood it would seem that nature was cruel indeed to cease giving nutrition and even rob them of so important a part. It is also thought that if the teeth were deprived of nutrition other bones would suffer too, has it been proven they do not? I think, probably, they do, but on account of the predisposition of the teeth to caries they suffer most. Now, to conclude, I will say the family physician generally knows of the condition first and I have avoided mention of treatment, for generally when we are called on, we only have to treat acute conditions and the treatment would be governed by the case in hand.”

The Science of Capping Pulp.

In an article in the *Atlanta Dental Journal*, Dr. J. H. Boozer says :

The invariable rule is that teeth which need capping have either exposed pulps or the dentine over pulp is decalcified. Teeth in which the pulps are entirely exposed sufficient to let the body of pulps be visible cannot be capped unless there has been no previous considerable pain, when it is attempted, an escharotic should be first applied to kill the layer of odontoblasts. When this is done the odontoblasts are destroyed in that section which removes the complication that would arise by virtue of them resuming their normal function of manufacturing pabulum. This would soon produce pressure and pain would result, or in the event the capping substance irritated, the odontoblast would send out its dias-

tase or soluble ferment to remove the irritant by dissolving it, as in the case of cements, which will kill the pulp. With these exceptions the operation will be the same as where there is decalcified dentine and in most all deep seated cavities the dentine is either wholly or partially decalcified to the pulp itself, which is perfectly natural, decay reaches the tube of dentine and opens it. The fluid, if remote from the pulp, will at first coagulate and stop tube, but after it goes in further the conditions are changed. It flows out faster than it will coagulate. Soon the drain on the odontoblasts causes irritation; besides it has been drained of all its pabulum, therefore it sends out its only defensive weapon its diastase, the calcified portion of tooth, unlike the stomach has no vital principle to prevent its dissolution, hence it is dissolved, the salts first, but finally the organic matter, and this is the only thing that will dissolve the organic matter at all, and therefore it is slow.

To cap a tooth in this condition, we must first remove such portions of decay as is deemed necessary, leaving as much of the decalcified dentine as possible. Disinfect this with non-escharotic disinfectants. (It is not so imperative to remove all germs as they are usually aerobic and will die.) Place over the decalcified dentine a substance that the diastase of odontoblast will have no effect on, such as tin foil. Put first a small portion of thick varnish (damar or sandarac) in bottom of cavity to hold the capping and gently press in piece of tin-foil paper or asbestos, asbestos is good but usually too thick. This cuts off the diastase, now flow over your cement, soft, when this has hardened you have a scientific capping. The irritation of cell will be relieved, soon it will commence to again form pabulum the diastase will be used up, the decalcified dentine recalcified and the normal function of pulp resumed. The inosculation of tubes prevents the formation of pabulum accumulating.

We hear so much about the coming obtunder of sensitive dentine. There are only two ways to obtund sensitive dentine, one is by dehydration, the other is coagulation, and there will never be any better obtunder than we have now, heat and coagulants. There is no pain in calcified portions of the teeth, for in them there are no organs of pain, pain is at the nerve endings which are immediately underneath the layer of odontoblast.

To produce pain requires pressure, the contents of canals in excavating, is pressed back on odontoblast and this on nerve ending, this is the pain of the teeth, to prevent this we must shut off the pressure. How can this be done? By making contents too thick and rigid to be forced back as with coagulants, but will be cut as the dentine, or, with heat driving it away entirely. You never had a patient who didn't accuse you of cutting in the same place, no matter how far apart you have been

cutting. There is no natural waste to the calcified portions of teeth and the transparent teeth of old people is the finished work of the pulp; when you kill pulp it is well to take the age of patient into consideration, in people over 40 the canals are much smaller and more tortuous, made so by the pulp shrinking and its room being filled with dentine. If some of the arsenic cappers will think of this they may at times save themselves much trouble by treating and saving such nerves, this may be done if you will accept the above as facts and follow its teachings, but so long as the present fibril theory of contents of canals or tubuli obtain we will be in doubt as to how to cap pulps and never know when we have the method that will succeed if any will.

Vulcanite Plates with Flexible Rubber Edges for Securing better Atmospheric Retention.

DR. W. B. AMES gives his method in the *Dental Review*, as follows:

"Pack flasks in usual way with ordinary vulcanized rubber, using draughtsman's tracing cloth between the halves of the flask to permit separation. When the mold is accurately filled with the ordinary rubber, as much of this is trimmed away with the scissors as it is desired to replace with the flexible plate rubber, Dougherty's or its equivalent, this packed and pressed to place and the case vulcanized for three hours or more. For upper plate the edge in the palatal region can be just back of the rugæ, leaving the palate uncovered. The flexible edge on uppers needs to extend only from a point back of the buccinator muscle on one side across the palatal region to the same point on the opposite side. For lower dentures the flexible edge must constitute the entire periphery of the plate. Samples shown show atmospheric retention impossible to get by plates made of hard rubber entirely. The model should be trimmed according to best judgment of operator, where flexible rubber is attached."

What Should the Dentist Do to Prevent Decay of the Teeth?

In a paper on this subject, published in the *Dental Register*, Dr. N. S. Hoff has the following to say, regarding prophylactic measures:—

"Every mouth does not require a radical detergent powder any more than every mouth requires a powerful disinfectant mouth-wash; each of these can do incalculable injury if used when not indicated. Irregular teeth can not be properly cleaned by a rigid, flat-faced tooth-brush, and a gritty or insoluble tooth-powder used with such a brush will

waste beyond repair the soft tissues and the tooth substance as well in all exposed or prominent places. Neither should these gritty powders or alkaline pastes or soaps be used on irritable and sensitive gum-tissues of low vitality because of impaired nutrition; rather mild stimulating and astringent antiseptic washes or soluble powders should be preferred.

In every case the prevailing conditions should receive careful consideration, and should there be any tendency to degeneration nothing aggravating should be allowed, but corrective measures should be devised each for the peculiar conditions present.

It is not always easy to diagnose local conditions, as many systemic disorders manifest themselves in the mucous membranes of the mouth; but in most cases these local manifestations of very obscure disorders will at least tolerate a mild antiseptic treatment when they would rebel at the application of excessive irritants. Cleansing appliances and applications should also be made agreeable to the patient. Awkward or difficult appliances to use will not be effective, or at least will not be effectively used.

Nauseating powders or washes will not be used by children or delicate people, who generally need such things most. All mouth-washes and detergent powders, soaps or pastes, should be made agreeable to the palate, so that patients will rather incline to make good and regular use of them.

Avoid bitter, hot or astringent excesses of all kinds, and if they are necessarily indicated correct the unpleasant taste or effect with sugar, to sweeten and overcome bitter elements, and bland oils or gums to emulsify the excessive irritants and so prevent excessive irritation and give them a more continuous action.

A BASIS FOR TOOTH-POWDER.

| | | |
|--------------------------------------|-----------|------------|
| Take of English precipitated chalk | | 10 drachms |
| “ “ finely-powdered cuttle-fish bone | | 6 “ |
| “ “ “ “ white sugar | | 3 “ |
| “ “ “ “ white castile soap | | 1 “ |

Mix, color with carmine, flavor with rose or wintergreen oil, and sift through a very fine sieve. This powder will serve all practical purposes where no medicinal effects are desired. If an astringent effect is wanted add 15 drops of tincture of myrrh; if a stimulant and astringent effect is desired add 20 drops of tincture of myrrh and capsicum to the original formula; if an antiseptic powder is wanted add to the formula 30 drops of Blacks 1, 2, 3 remedy. It may be made into a paste by mixing with it glycerine, or honey and listerine. It can be incorporated with softened castile soap and pressed into hard cakes. It may be mixed with mucilage or gum arabic and pressed into tablets. If the soap is objec-

tionable use in place of it powdered soap-tree bark ; if the sugar is objectionable use saccharin, 15 grains. If the cuttle-fish bone is too insoluble or gritty substitute carbonate of magnesium. And in various ways the powder may be modified or changed to conform to the requirements of special cases.

A BASIS FOR A TOOTH-WASH.

| | |
|-----------------------------------|------------|
| Take of saccharin | 10 grains |
| “ “ bicarbonate of soda | 10 “ |
| “ “ spirit | 10 drachms |

Warm gently to facilitate solution and combination and add 10 grains of salicylic acid. For use put a teaspoonful in a half a glass of water ; this makes an alkaline, antiseptic and stimulant mouth-wash. It may be made astringent and stimulant by adding tincture of myrrh and capsicum.

It may be made more antiseptic by adding listerine. It may be more agreeable to use if one drachm of the fluid extract of soap bark be added.”

Method of Making Seamless Gold Crowns for Capping the Roots of Teeth which are broken down, in order to make them serviceable for Masticating Purposes.

Dr. I. Renshaw gives his method in the *Journal of British Dental Association* as follows :

“ A circular disc was made by a hand press and cutting dies, then a plunger is fitted into the press, a fresh die is placed in position, and the disc placed thereon and the lever handle brought down and a cap made similar to a gun cap. The edges are then trimmed, and the cap placed over a crown die corresponding to the size and character of the tooth to be crowned. The edges are then made to correspond to and fit the neck of the tooth to be operated upon, by placing in a narrowing or diminishing die or dies, and any irregularity of size or shape may be regulated with contouring pliers. Before placing into position the cusps should be thickened by flowing a little solder into the cusps on the under surface of the crown. The root should be dried before fixing the crown, the cap should then be filled with soft fossiline, pressed into position in the mouth, the excess of white filling removed, and the crown held into position until the cement has set, when the case is completed.

The time occupied in making and adapting a crown ready for cementing took exactly three minutes to accomplish, this naturally not including the flushing of solder under the cusps.”

Aluminoid.

Aluminoid is a combination of rubber cement, any rubber dissolved in commercial chloroform, and aluminum powder. It is used to line the palatine surface of rubber plates.

To make. Dissolve rubber, (such as we are furnished for vulcanizing) in commercial chloroform, it should be of about the consistency of thick molasses. Incorporate with this about twice its bulk of aluminum powder; mix well. This gives you aluminoid. Invest wax upon upper plate in usual way, open and remove wax.

To use. Coat your model with liquid collodion and apply the aluminoid, which should be thinned with chloroform so that it will flow nicely, like paint; give four coats, allowing five minutes for each coat to dry; allow ten minutes or more for the last coat to dry. The case being packed, close and vulcanize; finish with brush and pumice, ending with chalk. The collodion and aluminoid are applied with camel's hair brushes. The aluminum powder can be procured from dealers in art supplies. The cost is small, requires but little time to apply, and adds much to appearance and comfort of plate.—*G. H. Harper in Dental Review.*

Fœtor Ex Ore.

In a contribution on this subject in the *Dental Cosmos*, Dr. H. J. Allen gives the following treatment:—As the cause of about four-fifths of all cases of fœtor ex ore is located within the oral cavity, it becomes apparent that the disorder in many cases may be entirely obliterated by appropriate local treatment only. All pulpless teeth and cavities should be treated and filled, all accumulations of calculus and foreign matter thoroughly removed, and any existing disease of the gums or the mucous membrane radically treated. These measures, together with an antiseptic mouth-wash, will be found efficacious in the great majority of cases.

Many formulæ have been given for the correction of a fetid breath, but in the majority of cases the causes have been overlooked, and the treatment administered on a false basis, resulting in temporary relief only, and the substitution of one odor for another. Invariably must the cause be removed before we can hope to attain permanent results. And granted the removal of the primary cause, then comes the intelligent use of medicinal agents to prevent its return and to maintain the normal condition.

Antiseptics are first upon the list, and of these it is our duty to select such as are more pleasant to use, essential qualities being equal. Not

ably among these may be mentioned carbolic acid, bichlorid of mercury, salicylic acid, oil of eucalyptus, benzoic acid, boric acid, permanganate of potassium, peroxid of hydrogen, listerine, borylyptol, and a solution of the antiseptic tablets prepared after the formula of Dr. Carl Seiler. Nearly all of these, when brought into contact with disease-germs, destroy their vitality by arresting fermentative processes and preventing the decomposition of organic substances.

In personal practice, a solution of permanganate of potassium (five grains to an ounce of water) has proven very efficacious as a rapid deodorizer. In this respect it is superior to almost any other agent for quickly producing a temporary effect, sufficient for the comfort of the operator during a sitting. In the presence of any disorganized organic matter, permanganate of potassium will turn from a bright purplish red to a dirty brown color. Therefore this agent, in addition to peroxid of hydrogen, can be relied upon as a faithful detective of effete matter.

A solution of the tablets prepared by Parke, Davis & Company after the formula of Dr. Seiler deserves high rank, as a mouth-wash and deodorizer. Its efficiency is at once apparent by a glance at the formula, which is as follows. Each tablet contains—

Sodium bicarbonate, 5 grs.;

Sodium borate, 5 grs.;

Sodium chlorid, 5 grs.;

Sodium benzoate, 7-24 gr.;

Sodium salicylate, 7-24 gr.;

Oil eucalyptus, 7-48 min.;

Thymol, 7-40 gr.;

Menthol, 7-96 gr.;

Oil gaultheria, 7-96 min.

These tablets are put up in convenient form to be dispensed to patients, and prescribed, in the proportion of one tablet to two ounces of water, form a mouth-wash unsurpassed for efficiency. In many cases where the indications permit, it is well to advise, in addition to such an inhibitory antiseptic, a germical solution of a positive value, such as bichlorid of mercury from 1 to 2,000 to 1 to 10,000.

Both listerine and borolyptol deserve mention as pleasant and efficient detergent preparations.

Of the other therapeutical agents mentioned, each has a limited field of application, and, as a rule, are to be used only upon the appearance of the proper indications.

In those cases in which the disorder is consequent upon some constitutional derangement, it is well to advise, in addition to the appropriate local treatment, some legitimate means of blood-purification. The func-

tions of excretion should be encouraged up to the point of free activity, as it is more than likely that one or more of them are sluggish and do not withdraw the requisite amount of waste material from the system. The diet also should receive careful attention, and all existing irregularities corrected. Any anemic condition should be overcome by the administration of some preparation of iron in combination with nutrient tonics; and, finally, the proper hygienic surroundings should be insisted upon as one of the most important factors of restored health."

The Dentist.

Dr. B. F. Sheppard read a paper before the Indiana Society on this subject, an abstract of which follows:

The dentist should be a man of decision and self-reliance; he should feel that he knows, and is able to do, so that his very attitude will forbid the suggestions of those who will have everything their own way and still hold him responsible for the success of the operation. Many a man who really knows fails because of a lack of self-reliance, thoroughness and stamina equal to his knowledge. He should cultivate that spirit of fortitude which will enable him to grapple with any and all difficulties bravely, decisively, marking the hand of a master in all his work.

The dentist should have combativeness and destructiveness sufficient to give efficiency; enabling him to witness pain and suffering and to employ the means necessary to relieve without trembling or hesitancy. It has been said that the physician needs the lion's heart and the woman's hand. It is equally true of the dentist—he should have combativeness and destructiveness, firmness and self-esteem, to give the lion-like power—ideality, constructiveness and gentleness, which come from refinement of temperament, to give the woman's hand. We have seen men who had power, self-reliance and persistency, who carried these forces with admirable gentleness and self-control.

He should have prudence, caution, secretiveness and good common sense, and the more common sense the better. Cautiousness will make him desire to do the right thing at the right time and place. Secretiveness will enable him to keep his mouth shut at the proper time, and control his countenance as well as his expressions, and be always master of the situation, when too open an expression would have been disastrous.

He should have large hope and mirthfulness, and an excellent talking talent, so that he may put an atmosphere of mirthfulness and good feeling around him at all times.

Large constructiveness is necessary to the dentist, in fact his profes-

sion has been considered by some as only a mechanical trade. While this is not true, yet his ability to put together, his judgment or knowledge of the right conditions in constructions, will mark his success in prosthetic and operative dentistry, as well as all operations in oral surgery. It will enable him to meet the requirements of anesthetics in dentistry, elaborating and bringing together the many parts into one harmonious whole.

He should have strong social feeling, so that all the relations of social life may be appreciated by him; so that his patients will become friends, and feel a lively interest in his success.

He should have continuity of purpose. All the great minds of the world have been marked by a spirit of continuance, a pushing ahead, and an unflagging zeal which could brook nothing less than ultimate success.

Eucaïn in Dental Practice.

Dr. Louis Wolff, in an article on this subject published in the *Journal für Zahnheilkunde* says:

He has followed in general the methods of his colleague, Kiessel. That he thinks it the duty of every dentist who has the opportunity in the way of a clinic, to experiment with all anesthetics.

1. That 1 to $1\frac{1}{2}$ grammes of a 10 per cent. solution, injected at once have sufficed for the extraction of as many as the roots of five adjacent teeth.

2. That after the extraction of teeth, when eucaïn has been used, considerable swelling has ensued, lasting 2 or 3 days. Assumes that the swelling is due to the injection in one shot of the entire amount of eucaïn used.

Now washes out the mouth with peroxide of hydrogen previously to making the injection, also punctures the gum with a canula after the extraction is over and by means of the finger presses out all of the eucaïn which might be left in the tissues. Also makes a number of injections of 3-10 of a gramme each, up to the amount which he wishes to use, instead of a single injection of that size. Where all the teeth were to be extracted preliminary to plate work, has found eucaïn excellent and anesthesia perfect.

3. For a single tooth, injects 3-10 of a gramme, waits 2 to 5 minutes, then extracts. Patient will be conscious of local numbness or insensibility to touch, at the locus of the injection.

4. $3\frac{1}{2}$ grammes of a 10 per cent. solution gave rise in one instance to a temporary headache.

3 grammes he considers a safe maximum dose (10 per cent. solution.)

5. Has extracted roots of 22 teeth with injections aggregating 3-10 grammes.

People who make the eucain, in reference to the after-swelling, claim that it was caused by methyl-alcohol, which in their new method of making, is no longer present.

6. Never has noticed acceleration or diminution in pulse rate; or any signs of dizziness, faintness or nausea, even under maximum dose.

7. Anesthesia lasts 10 to 15 minutes.—*Translated for the OHIO JOURNAL by J. W. Van Doorn, D. D. S.*

Defects in Making Crowns and Fitting Them.

A number of times during the past few months we have taken off bicuspid crowns because caries had begun on the sides of roots. In some cases the cavities were so deep that it was almost impossible to reset them. The lesson we drew from these cases was that the crowns were not carefully fitted to the sides of the roots primarily, and secondarily the sides were not festooned properly to permit of easy cleansing of the spaces between the necks of the teeth.

Much care is necessary in the fitting of a band to a root; still greater care should be exercised to contour on the proximal surfaces to protect the interproximal spaces. Bridge work is menaced by lack of all such precautions. The piers when lost or maimed will spoil all artistic mechanical work by rendering it useless. We have rarely seen cavities on the labial or lingual surfaces of roots after crowning, but nowadays we see many cavities on the surfaces mentioned. Many teeth would be preserved for a longer period of usefulness if they were carefully filled instead of being cut off to receive a poorly fitted crown. Look at your own cases and see where the fault lies.—*Ed. Dental Review.*

Hypercementosis.

In an article in the *Cosmos*, Dr. G. A. Maxfield enumerates the symptoms by which we can diagnose hypercementosis, as follows:

First. The offending tooth must be on the same side as that on which the pain is located.

Second. We must have as complete a history of the case as possible.

Third. Note the articulation, whether there is excessive, or lack of function.

Fourth. Examine carefully for cases of pulp irritation, and note the condition of third molars. After satisfying ourselves that the pain cannot be caused by either of these conditions, we may pronounce it hypercementosis.

Fifth. Concluding the pain to be caused by pulp-irritation, as noted by the cavities or fillings,—having devitalized the pulp and filled the canals,—the “pulp pain” continuing, we may conclude it is a case of hypercementosis.

Treatment. There is no remedial or palliative treatment. The tooth must be extracted.”

White Decay of the Teeth.

A word about what may cause this too prevalent, evil white decay, and the habits of people who present this condition: I find this condition usually in mouths subjected to uncleanness, persons who are in the habit of lunching between meals, and cleansing their teeth before breakfast, or when they “dress up”; but the white decay is rare where the teeth are thoroughly cleansed just before retiring. The soft foods—or foods classed as hydrocarbonates—when allowed to remain on and between the teeth, especially at night, are in my opinion responsible for much of this white decay. Such foods form the hot-bed of decay and the base of supply for lactic acid. . . .

Do not attempt to fill teeth suffering with white decay until you are convinced that their surroundings are changed or will be. Explain to patients the necessity of properly cleansing their teeth and the benefits to be derived therefrom. Get them to promise to spend at least three minutes a day in cleansing their teeth, and if they cannot cleanse them but once a day, let that once be just before retiring for the night, thereby having the mouth clean for the greater number of hours of the twenty-four. Under these circumstances, we may expect more of our fillings and our work in general to be a credit to us and a joy to our patients.—*I. C. Edington, Odontographic Journal.*

Diet.

Occasionally we are asked by patients what are the best foodstuffs to eat which afford a hope of preserving the teeth; or, are certain foodstuffs injurious to the teeth? No foodstuff is better suited for cleansing the teeth than the muscular fibre, connective tissue and tough skin eaten by

carnivora. Our patients, however, are not true carnivora, and such a diet would be anything but palatable to many people. An American writer points how inconsistent with hygienic laws it seems that foodstuffs most useful for cleansing the teeth, such as meat and well cooked bread, are served first at meal times, whilst dessert, containing so many free acids and the hydro-carbons so well suited to the life of micro-organisms, come last.

A person, young or old, subsisting upon the present day good living system, and being fed mainly upon the products of fine white flour, such as fancy pastries and the like, loose their teeth in spite of the strictest vigilance, and the most careful dentistry, simply because the preparation of this white flour necessitates the elimination of the necessary elements which are contained in good wheat bread, and without which life of a healthy nature is impossible.—J. G. RANKEN, *Dental Record*.

Tobacco.

In an article in the *Dental Record*, Dr. J. G. Ranken speaks as follows, regarding tobacco:—

“How does smoking affect the teeth is a question, in one form or another, we are often called upon to answer.

Dr. Richardson holds that there are certain substances common to all varieties of tobacco smoke.

Firstly, a certain amount of watery vapor.

Secondly, a small quantity of free carbon. It is this free carbon that gives the peculiar dark yellowish tinge to smoker's teeth, and which, when found in out of the way places during the examination of a mouth may be mistaken for decay beginning.

Thirdly, a certain quantity of ammonia, which gives an alkaline reaction to the smoke and partly excites the salivary glands. This it is which gives to tobacco smoke its prophylactic properties in the mouth, and it is for this reason that we find in the mouths of smokers who brush their teeth so few decayed teeth in comparison with non-smokers of a similar age.”

BRIEFS.

Fusible Metal.—How is Wood's fusible metal made? Bismuth 15 parts, lead 8, tin 4, cadmium 3.—*Dominion Journal*.

Be a Gentleman.—Strive to obtain that position before the people that they regard you as an intelligent, thoroughly educated man worthy of their respect and patronage.—*J. H. Grant, Texas Journal.*

To Clean Files.—How can I clean my files used for rubber work? Hold them in the jet of steam which escapes from the tap of your vulcanizer when the pressure is above fifty pounds.—*Dominion Journal.*

Never Temporize.—As a theoretical ambition or aim, which can not, however, always be made practical, I would suggest a maxim something like this: "Never temporize, but make each and every filling for life."—*N. S. Hoff, Register.*

A Liberal Education.—The need of a liberal education becomes more evident as new scientific discoveries multiply, so that we may understand them and avail ourselves of that which is useful to us.—*J. Humphreys, Jour. Brit. Association.*

High Grade Work.—The higher the grade of workmanship the more difficult the work to perform, and the more artistic and serviceable the article, the greater the chasm between scientific dentistry and quackery.—*E. C. Goldthorpe, Dental Review.*

Preventive Dentistry.—Decay never occurs on any part of a tooth which may be and is kept clean. The fissures and pits, which cannot always be kept clean, should be filled on the first indications of decay. Here is preventive dentistry in a nutshell.—*Welch's Monthly.*

Chew on Both Sides.—To get the full benefit of insalivation food should be chewed on both sides of the mouth during the course of a meal, frequently changing from one side to the other. The food then leaves the mouth thoroughly triturated and partially digested.—*S. W. Johnson, Texas Journal.*

Tobacco and Cancer.—Smoking and tobacco chewing have no direct effect in producing cancer, but if they cause soreness or excoriation of the tongue they do to a certain extent act as predisposing causes. Cancer much more often affects a tongue which has been the seat of previous disease than a healthy one.—*E. W. Roughton, British Journal.*

Send Patients to a Specialist.—If a dentist finds that he cannot regulate the teeth of his patients, or overcome irregularities, he ought to let the business alone, or at least be honest enough with himself and with his patients to recommend them to go to some one who knows something about regulating teeth.—*J. G. Reid, Dental Review.*

Absorption of Roots of Deciduous Teeth.—The fact that ab-

sorption may begin on the side of the root opposite the permanent tooth may be explained by the presence of osteo-clasts in this position and their absence in the proper position, their absence being subsequently supplied as necessity and increasing pressure demands.—*A. W. Haidle, Register.*

Cataphoresis and Electrolysis.—Is it possible to have both electrolysis and cataphoresis simultaneously? In all cases of cataphoresis you do get some electrolytic effect at the same time. Electrolysis and cataphoresis are almost always combined; but when cataphoric electrodes are used, the electrolytic effect is so slight that it is not perceptible.—*W. C. Phillips, International.*

Cannot Prove It.—You know you have heard different things about the way college affairs are managed: That students are not taught practical dentistry, the college people are getting too rich, the clinics are ruining practice, and all that sort of thing. I would like to see all those who do criticise the college get up and say it publicly.—*J. D. Patterson, Western Dental Journal.*

Cataphoric Medication.—In cataphoresis, the quantity of the medicament introduced will depend both upon the strength of the current used and upon the density of the tissue. The less the density of the tissue the more of your medicaments you will be able to introduce, and the stronger the current the more medicament you will be able to introduce.—*W. C. Phillips, International.*

How to Prepare Eucaïn.—It has been found that solutions of eucaïn hydrochlorate in the proportion of one part to six and a half parts of sterilized water will, after awhile, separate some of the eucaïn. To prepare permanent solutions one part of eucaïn should be dissolved in 10 parts of sterilized water. Such solutions remain perfectly clear for an indefinite period of time.—*International Journal.*

Fees.—In the matter of fees, I have always explained that my time is worth just as much to work for a child as for an adult, and I have called attention to the fact that our brothers in the medical profession charge the same for a child as for a grown person. They can be convinced that the curing of pain for a child is worth just as much as alleviating pain in the adult.—*Dr. Slater, Western Journal.*

Manipulation of Gold.—Among other things stated, Mr. Leslie remarked that gold was a peculiar metal, and in order to manipulate it to the best advantage for filling teeth, it must be dealt with kindly. He said that too much force was generally applied in packing it, and that the "life" or "spirit" of the metal was sometimes fairly driven out of it by severe manipulation.—*C. E. Francis, Practitioner and Adv.*

The Dentist's Money.—Others say that the dentist's money comes easily and goes easily. I differ here also, and say that a dentist dearly earns all he can reasonably charge. There is no labor more exhausting or wearing than standing hour after hour at a dental chair, to say nothing of the extra strain on one's system when the patient happens to be a nervous and irritable one.—*C. H. Nicholson, Odontographic Journal.*

Where to Cut an Aluminum Plate when Swaging.—Of course, it is always necessary to cut your plate metal; you never can do away with the wrinkles in it at all. In cutting aluminum I always cut it on the side, so as to have a continuous piece in front, as I think it makes a stronger plate; because when a plate breaks, it usually breaks in the middle, rarely breaking at the side.—*Dr. Coston, Western Journal.*

Fill the Small Cavities.—The small pin-like cavity is easily filled, and decay arrested for a lifetime. When inspection has been neglected for a few years examination reveals, on the contrary, immense cavities which cannot be filled, and unfortunately the offending tooth has to be extracted, thus laying the foundation for further injury to the other teeth, and bringing about the necessity of false teeth.—*Dominion Journal.*

The Best Cocain.—I have been using a number of medicaments in obtunding sensitive dentine: I have used cocain, I have used atropin a little during the past week, but my best success has been with Parke Davis & Co.'s hypodermic tablets. This formula is hydrochlorate of cocain, morphin, and sulphate of atropin. In the use of these tablets I take six drops of salt water, and apply the positive pole to the dentine of the tooth.—*C. A. Meeker, International.*

Cocain and Opium.—Dr. Jas. P. Holder, says his best results have been secured with the solution of cocain with tincture of opium instead of water. He also reported to me two cases in which he removed two pulps, and, he thought, painlessly. I am quite interested in that part of cataphoresis; it seems to me if we can do that, we certainly have made great progress in getting rid of arsenic, which some of us unfortunately are obliged to use.—*Dr. Smith, International.*

Care of Children's Teeth.—Children who are beginning to get the permanent teeth require more attention than has been devoted to them, even in well-to-do families. It is not that they require to go frequently to the dentist, but rather that their teeth should be inspected at least every six months, in order to discover the beginning of decay in the permanent teeth. The old adage that "prevention is better than cure," applies to these causes peculiarly well.—*Dominion Journal.*

Sarcoma.—If a growth springs up which is simply a multiplication of cells, being a counterpart of the tissue from which they grow, for example, in bone, cartilage or fibrous tissue cells of the same kind are reproduced as fully matured types of these tissues, we would have as results tumors which are truly osseous, cartilaginous, or fibrous; but if instead, the cells do not mature, but remain in their embryonic state, this embryonic tissue growth is a sarcoma.—*H. H. Schulman, Review.*

Dental Advertising.—We propose publishing the advertisements of the shining lights of dental advertising in Canada. In some cases the advertisers conceal their names. As they should not blush for their own productions, we propose to publish their names all the same. We may devote an entire number to this matter, including the code of ethics. We solicit copies of all objectionable advertisements, and in cases where the names are concealed we would like to have them.—*Editorial Dominion Journal.*

Weld's Syrup of Iron Chloride stains teeth subjected to prolonged soakage therein, but does not affect the lustre of the enamel. This latter fact, together with the further one that the syrup does not respond to ordinary tests for acidity, speaks volumes for its preferment over other, older and popular preparations of iron, assuming of course that it is equally efficacious systemically. This latter, however, seems to be well vouched for by some of the best known practitioners in this country.—*Odontographic Journal.*

Articulation of Teeth when Lower Jaw Protrudes.—With lower jaw protruding one-half inch, the upper front teeth should be articulated inside the lower, just as the patients natural teeth did; then be very sure you do not get too great a closure of jaws, by making the teeth too short—a very common fault.

The farther the gums are thrown apart, the less protrusion; an improved appearance of the face, and greater facility in using them.—*L. P. Haskell, Welch's Monthly.*

An Effective Antiseptic.—Parke, Davis & Co., have had on the market for some time an effective antiseptic and deodorant known as "Euthymol," formerly listed under the name of "Eucalyptus and thymol antiseptic." It contains eucalyptus, gaultheria, wild indigo, boric acid, menthol and thymol. In dentistry it is applicable as a dressing, a detergent, a mouth wash. The flavor is acceptable, the odor pleasant; it is non-poisonous and non-irritant. It comes in two forms, liquid and tablet.—*Odontographic Journal.*

Cause of Pain.—It is not unreasonable to assume that pain origi-

nates in tissue changes of a chemical nature. It is well known that normal muscle action causes increased chemical changes in the muscle tissues, the product of which under ordinary circumstances are readily and promptly renewed, but if this becomes too rapid from over exertion or prolonged exertion, the ordinary blood current is unequal to the task; transition products accumulate, and muscle tire is the result; which is quickly carried to the point of pain.—*W. Belcher, Odontographic Journal.*

College Instruction Good.—No college man ever taught a student anything else in the world but to spend every energy and use every effort in the world to do the best work for his patients. No college man ever taught a student to get all kinds of local anesthetics for the purpose of "extracting teeth without pain." He may in the course of lectures on therapeutics have spoken of these methods as relieving pain, as relieving distress and performing all operations with the least amount of pain, but he is always advised to let these things alone or handle them cautiously.—*A. O. Hunt, Western Journal.*

Cocain and Thymol as an Obtundent.—The preparation with which I have had some success as an obtundent is composed of equal parts of cocain and thymol, made by heating the two in a test-tube, the thymol being melted, and this in turn dissolved in the cocain; or it may be made by grinding the two together, a thick sirupy fluid being the result. For sensitive dentine I use it by placing a piece of asbestos paper saturated with it in the cavity and over as broad a surface as possible, covering this with zinc phosphate, and allowing it to remain two or three days or more.—*S. H. McNaughton, International.*

Advise with Physicians.—Dentists, from the very nature of their work and practice, can not be expected to make accurate diagnoses, nor to intelligently prescribe the proper quantity or quality of food for the great variety of physical conditions of the women of our day, but it is my opinion that we should not altogether ignore this matter, but that we should make ourselves as familiar with its general bearing as possible and advise with the family physicians of our patients and gather data that shall help to establish more definite and scientific methods of meeting this problem than any we now possess.—*N. S. Hoff, Register.*

Theory vs. Practice.—Ah! dentistry is easy work theoretically. If I were to tell you how to construct the most beautiful piece of bridge-work in theory, the lines drawn closer than a hair's breadth, the strength unassailable, articulation rivalling nature's best, and as to cleanliness, it cleans itself, how many before me to-night could make such a piece, a triumph in works of the dental art? I answer but few, indeed, as I am satisfied in my own mind that no progressive workman, and we all aim

to be progressive, is ever completely satisfied with the operation, even when finished to the best of his ability.—*W. S. Twilley, International.*

Cataphoresis.—It is entirely futile and a waste of time to make arguments against cataphoresis, because cataphoresis is a physical fact. It has been demonstrated that the electrical current will make certain fluids move from the positive pole, without resistance, towards the negative pole and no more argument is necessary on that subject. The means by which you are able to produce that result offer a very large field for investigation; it will be a very interesting field, one in which the practical dentist, with his mechanical skill, will probably be able in the end to do things worthy to be written.—*W. J. Evans, International Journal.*

Modern Civilization.—An increase of dental decay and degeneration seems to accompany modern civilization. In this country the gradual disappearance of the thriving agriculturist with his robust family and the crowding into towns seemed to be an important weakening factor. At the same time we are sending to our colonies thousands of the finest specimens of our men, assisted emmigration only being granted to those who can be medically passed as sound and healthy. On the other hand the more free admixture of the nations in marriage, a healthier ideal life, the golf link and the bicycle, are exerting their counteracting influence.—*J. Humphreys, Journal Brit. Association.*

Causes of Nasal Obstruction.—Arranged somewhat in the order of their frequency are: Adenoid vegetations in the naso-pharynx. Hypertrophied tonsils, especially those which tend to meet in the middle line, and, with the arch of the tongue, block up the pharynx when the mouth is closed. Injuries to the nose from external violence having as their result septal deviations and spurs. These injuries have often taken place in early childhood, accompanied by a nose-bleed and later have been forgotten. Hypertrophies of the turbinate tissue. Polypi. Foreign bodies. Syphilis, secondary, tertiary, and acquired. Malignant growths. Congenital atresia. Tuberculosis.—*G. L. Richards, International Journal.*

Fillings and Cataphoresis.—*Dr. Eaton.*—It is very much to be desired that we shall be able to use cataphoresis in teeth that have already one filling in them. I have found much trouble in such cases. It causes a great deal of pain, and I am going to ask Mr. Wheeler if he will give us the benefit of any discovery he has made in regard to relieving that condition of pain.

Mr. Wheeler.—The one thing to do in such cases is to thoroughly insulate the filling that is in the tooth with sandarac varnish. Dr. Gillett

uses Gilbert's temporary stopping. I think a shellac varnish would be a better insulator. If you thoroughly insulate the filling in the tooth you will have no trouble with it.—*International Journal*.

Formalin Gelatin as an Antiseptic.—This is a hard, transparent substance, affected neither by heat, acids nor alkalies, but decomposed, when pulverized, by the action of the living cells of the organism in such a way that the antiseptic properties are being constantly liberated. Schleich of Berlin asserts that it will arrest in 24 hours any acute suppurating process and insure absolute asepsis to the course of every wound. It is passive on necrosed tissues unless moistened with the following solution: Pepsini, 5.0; acid. hydrochlor., 0.3, and aqu. dest., 100.0, when the disinfecting process goes on as usual. It is made by adding 25 drops of Schering's pure formalin solution to 500 g. of dissolved and cleansed gelatin. When dry the hard sheets are pulverized ready for use.—*Therap. Monats.*

Management of Children.—I find the important and useful point is first getting acquainted with the child. There is nothing like kindness and love toward the child to win that little one to you, so you can operate without any fear, without any roughness. I want the parent to be with the child; I want to show them what is the matter with it and what is necessary to be done. There is a great deal to be gained by showing the parent how to take care of the child's teeth, how to use the brush.

Then we do not want to go into any rough work. You can take oxphosphates and fill those teeth and keep them until the child is 12 or 14 years old, and you won't find any extra decay there if is properly attended to; and then you can later remove your cement and put in your metal fillings. You do not want to go to crowning the teeth of children.—*H. J. McKellops, Western Journal.*

Irregularities, Nasal and Throat Diseases.—In the course of my experience I have especially observed that obstructive diseases of the nasal passages and throat frequently accompany deformities of the teeth palate and jaw. I have had the opportunity of seeing a colleague of mine operate on several patients for the removal of adenoid growths from naso-pharynx, and I have noticed that in many of these patients, high narrow palates, contracted jaw, and prominent front teeth were present. I feel that we as dentists are in a very advantageous position for recognizing in young patients who are sent to us for dental irregularities, the presence of this concomitant nasal and throat disease. Knowing, then, that early operation in such cases is of the utmost value, it is plainly our duty to advise that a competent throat specialist be consulted, to remedy the obstruction to nasal breathing which, if it does not cause, at any rate

often accompanies the palatal troubles which come before us.—*T. Genge, Journal Brit. Association.*

New Publications.

TRANSACTIONS OF THE AMERICAN DENTAL ASSOCIATION 1895. This issue contains some valuable material, the article by Dr. M. H. Cryer, on "Study of Maxillary Bones," deserves especial mention. The book contains 380 pages, the engravings are well made and the typography and presswork are a credit to the publishers.

WELCH'S MONTHLY is the title of a new dental journal edited by Dr. T. B. Welch, Vineland, N. J., and published by A. S. Robinson, Philadelphia. It is patterned after *Items of Interest*. We wish them success in their undertaking.

ITEMS OF INTEREST has been purchased by the Consolidated Dental Mf'g Co., N. Y., and Dr. R. Ottolengui secured as editor. The first issue under the new management, a double number, has just appeared. We are promised as good a journal as capital and labor can make and with Dr. Ottolengui's ability as a dentist, editor, and author, success is assured. We notice that proper credit for extracts is duly given and the editor says that "In future one of the axioms which shall adorn the walls of the editorial sanctum shall read: 'Credit to whom credit is due.'"

May you live long and prosper.

SOCIETIES.

Indiana State Dental Society.

THE following officers were elected for the ensuing year:

President, W. S. Rawls, Indianapolis; *Vice President*, D. L. Overholzer, Logansport; *Secretary*, M. A. Mason, Ft. Wayne; *Treasurer*, R. T. Oliver, Indianapolis; *Trustees*, T. S. Hacker, Indianapolis; T. A. Goodwin, Warsaw; N. W. Hiatt, Marion.

The next meeting will be held at Ft. Wayne in June, 1897.

OUR AFTERMATH.

OHIO STATE DENTAL SOCIETY.—The next meeting of this society, to be held in Columbus, Tuesday, Wednesday and Thursday, Dec. 1, 2 and 3, promises to be an exceptionally good one and many prominent dentists from other states are expected. A splendid program is now being prepared and we hope to present it in the Nov. issue.

On the evening of Wednesday, Dec. 2, arrangements have been made for a visit to the Ohio State University. An address of welcome will be delivered by the president, Dr. James H. Canfield, in the new University Opera House, after which Prof. B. F. Thomas, who stands very high in the electrical world, will demonstrate the Crookes tube and fluoroscope, illustrating the X rays as applied to dentistry. If the day be clear, Prof. H. C. Bard will exhibit the McMillan Observatory with its large telescope and we can take a "peep."

Everything will be done to make this visit useful and pleasant. We want every reputable dentist in Ohio to be present at this meeting so cross the time off your appointment book to-day.

AUSPICIOUS OPENING.—The new college of the Dental Department of Western Reserve University, Cleveland, O., was formally opened on Wednesday, Sept. 23d, 1896. The program consisted of an address by Prof. G. H. Wilson, and other ceremonies appropriate for the occasion. The new college building is very complete and one of the best equipped in the country. Its location, light and accommodations are excellent. The total floor space is about 13,000 sq. feet, and in the medical college 9,000 sq. feet. The operating room and prosthetic department each contain 4,000 sq. feet.

Students will be limited to one hundred and fifty, so that each can receive personal attention from instructors. More than one-half this number are already in attendance.

IDENTIFIED BY THE TEETH.—At the inquest over the body of a young lady, found in the river at Dayton, O., and supposed to have been murdered, Dr. L. E. Custer identified the remains as those of Miss Bessie Little, by the dental work he had done for her.

The following regarding the inquest is taken from the *Dayton Times* of Sept. 5th:

"The first witness called to the stand yesterday afternoon was Dr. L. E. Custer, the dentist, who identified the body as that of Bessie Little. He said that he did the first work for the girl in 1892 and that the last work was done October, 1895. The last time she called at his office was February 10 last, at which time she paid up the balance of her account. Dr. Custer said that he kept a record of his work and after examining the teeth of the corpse and his record he had no doubt whatever but that the remains were those of Bessie Little. He said he based this decision solely on the teeth, but that the general appearance corresponded with his remembrance of the girl."

THE OHIO DENTAL JOURNAL.

VOL. XVI.

NOVEMBER, 1896.

No. 11.

CONTRIBUTIONS.

A Light Artificial Denture.*

BY W. H. TODD, D.D.S., COLUMBUS, OHIO.

WE often get good things, not entirely original with ourselves, that do not come through the prescribed channels of society and dental journals but in the back door of our offices, as we might say, without knowing to whom to give credit. Combining these with our own methods, results often in a very useful and beautiful piece of work, which might do as much good if published as though entirely original.

To such an one is the artificial denture I wish to call your attention.

After you have carved and prepared the plaster model as the mouth would indicate, it should be painted with a thick shellac varnish, and covered, where you want the plate, with Japanese lead (lead foil that comes in chests of tea). Be sure to have the foil burnished on the model, so that every inequality is shown. Now get the articulation as usual. If you wish to try in, take a piece of hard base plate and cut it short of the alveolar ridge so that when the teeth are set up it can be cut out leaving the teeth standing. Mount the teeth and try in, if all right cut out

*Presented at the Northern Ohio Dental Society, Cleveland, June, 1896.

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the hard base plate as close to the pins of the teeth as possible replacing the base plate with a plate of Japanese lead, using two or three pieces according to thickness of plate required, smoothing up next to the teeth, also the rim, with wax, just as you want the plate when finished. Then take another piece of Japanese lead and cover the entire palatine portion and rim of plate to the teeth, always burnishing each piece down close.

The last piece cover with shellac varnish so that it will adhere to the other part of the flask, then flask up. Warm before separating; take out the middle pieces of foil and wash out with hot water. Use a piece of chamois skin and a little mercury and proceed to polish the foil in both halves of the flask until it is as bright and smooth as glass, then you are ready to pack, using the toughest rubber you can buy (I find Ash & Son's Whalebone No. 1 very good).

When you take the plate out, you will have nothing to do but trim the edges and brush on the lathe, the result being the lightest, toughest, and thinnest plate made.

Is it a Fact that Teeth Decay on the Left Side of the Mouth more than on the Right? If so, why?*

BY F. S. WHITSLAR, D.D.S., YOUNGSTOWN, OHIO.

To answer the question definitely, if more teeth decay on the left side of the mouth than on the right, would require more time and research than an active practice of nearly half a century would afford. Inasmuch as it is a question involving statistics, I ask your careful attention to the following as an approximate answer:

Abstract of the first eight volumes, recording the condition of the teeth of the human crania in the Peabody Museum of Harvard University, tabulated by Drs. Andrews, Knight and Mr. G. W. Newton, Anatomist.

ANCIENT PERUVIANS.

SUPERIOR MAXILLAE.

| | |
|---------------------------------------|-----|
| Number of Maxillae examined..... | 408 |
| Number of decayed teeth observed..... | 189 |

* Read before the Northern Ohio Dental Society, Cleveland, June, 1896.

| | |
|--|------|
| Number of decayed teeth on the right side..... | 93 |
| Number of decayed teeth on the left side..... | 96 |
| Diminution in number of teeth | 87 |
| Teeth lost <i>ante mortem</i> on left side..... | 522 |
| Teeth lost <i>ante mortem</i> on right side..... | 505 |
| Teeth lost <i>post mortem</i> | 3343 |
| Cysts the result of alveolar abscesses..... | 357 |

INFERIOR MAXILLAE.

| | |
|---|-----|
| Number of Maxillae examined..... | 110 |
| Number of teeth decayed..... | 48 |
| Number of teeth decayed on right side..... | 23 |
| Number of teeth decayed on left side | 25 |
| Teeth lost <i>ante mortem</i> | 187 |
| Teeth lost <i>ante mortem</i> , right side..... | 91 |
| Teeth lost <i>ante mortem</i> , left side..... | 96 |
| Teeth lost <i>post mortem</i> | 845 |
| Cysts the result of alveolar abscesses. | 30 |
| Enamel of teeth pitted | 15 |

CALIFORNIA INDIANS.

SUPERIOR MAXILLAE

| | |
|--|-----|
| Number of Maxillae examined. | 159 |
| Number of decayed teeth observed..... | 30 |
| Number of decayed teeth on right side | 12 |
| Number of decayed teeth on left side..... | 18 |
| Teeth lost <i>ante mortem</i> | 417 |
| Teeth lost <i>ante mortem</i> on the right side..... | 196 |
| Teeth lost <i>ante mortem</i> on the left side | 221 |
| Teeth lost <i>post mortem</i> | 780 |
| Cysts the result of alveolar abscess. | 154 |
| Enamel of teeth pitted..... | 45 |

INFERIOR MAXILLAE.

| | |
|--|-----|
| Number of Maxillae examined..... | 87 |
| Number of decayed teeth observed..... | 31 |
| Number of decayed teeth on the right side..... | 15 |
| Number of decayed teeth on the left side..... | 16 |
| Teeth lost <i>ante mortem</i> | 157 |
| Teeth lost <i>ante mortem</i> on the right side..... | 75 |
| Teeth lost <i>ante mortem</i> on the left side..... | 82 |
| Teeth lost <i>post mortem</i> | 383 |
| Cysts the result of alveolar abscesses..... | 64 |
| Enamel of teeth pitted..... | 2 |

NICARAGUANS.

SUPERIOR MAXILLAE.

| | |
|--|----|
| Number of superior Maxillae examined..... | 9 |
| Teeth lost <i>ante mortem</i> | 45 |
| Teeth lost <i>ante mortem</i> on the right side..... | 26 |
| Teeth lost <i>ante mortem</i> on the left side..... | 19 |

| | |
|---|----|
| Teeth lost <i>post mortem</i> | 73 |
| Cysts the result of alveolar abscesses..... | 2 |
| Enamel pitted | 1 |

INFERIOR MAXILLAE.

| | |
|---|----|
| Number of inferior Maxillae examined..... | 11 |
| Number of teeth decayed on the right side..... | 5 |
| Number of teeth decayed on the left side..... | 3 |
| Teeth lost <i>ante mortem</i> | 28 |
| Teeth lost <i>ante mortem</i> on right side..... | 14 |
| Teeth lost <i>ante mortem</i> on the left side..... | 14 |
| Teeth lost <i>post mortem</i> | 99 |
| Cysts the result of alveolar abscesses..... | 2 |

I will not weary you with a detailed statement of the teeth of the Dell Fuegan, Mexican, Coahuilan, Guatemalian, and an examination of Prehistoric Crania by Dr. J. R. Patrick, but will give the total number of teeth examined and the percentage of teeth diseased.

| | |
|--|------|
| Total number of teeth examined..... | 8481 |
| Total number of teeth diseased..... | 2493 |
| Total percentage of diseased teeth..... | 29.4 |
| Total number of upper teeth examined..... | 5655 |
| Number of teeth diseased | 1866 |
| Percentage of diseased teeth..... | 33.0 |
| Total number of lower teeth examined..... | 2826 |
| Number of teeth diseased..... | 627 |
| Percentage of teeth diseased..... | 22.2 |
| Total number of teeth diseased on right and left side..... | 2493 |
| Number of diseased teeth on right side..... | 1220 |
| Number of diseased teeth on left side..... | 1273 |
| Excess of percentage of the left over the right..... | 4.17 |

At this point I call your attention to the fact that although but a limited number of crania have been tabulated, you will observe that all the lesions that are present in the oral cavity of our race to-day, were present in a great number of those prehistoric crania, from which fact we are led to conclude that decay of the teeth is not born of civilization, but is a child of the ages. Another fact worthy of notice: The superior teeth are liable to decay earlier and more rapidly than the inferior. Taft gives these percentages in 1,000 cases:

| | |
|-------------------|------------------|
| Central incisors, | 2 $\frac{1}{2}$ |
| Lateral incisors, | 3 $\frac{2}{3}$ |
| Cuspids, | 2 $\frac{1}{4}$ |
| 1st Bicuspids, | 8 $\frac{2}{3}$ |
| 2nd Bicuspids, | 13 $\frac{1}{3}$ |

| | |
|------------|--------|
| 1st Molar, | 37 |
| 2nd Molar, | 22 2-5 |
| 3rd Molar, | 10½ |

In 10,000 cases Magitot found decay as follows:

| | |
|-------------|------|
| Superior, | 6004 |
| Inferior, | 3996 |
| Right side, | 4791 |
| Left side, | 5209 |

Pardon a reference to a personal record. Of operations made from 1865 to 1875 shows that 3½ per cent. more operations were made on the left than on the right side of the mouth.

From the foregoing we are led to conclude that decay is more prevalent on the left side, and in upper jaw, with the exception that the lower first and second molars are more affected by decay than the upper.

Having briefly and perhaps imperfectly answered the first question, I now answer the second, Why do teeth decay on the left side of the mouth more than on the right?

The principal reason why teeth decay on the left side more than on the right is because people eat on the right side. This cleanses the teeth by rubbing off the food which would otherwise ferment and decompose, thereby generating acid which would act on the structure of the teeth and cause decay. All teeth should have exercise. It promotes the circulation of the blood in the gums and peridental membrane and pulp tissue, consequently the organic portions of the teeth have more power to resist the ravages of disease; in other words, vital resiliency is stronger. The shape of the teeth and gums naturally are made for the food to glide over them, but if not used of course the food will stick to them. Carbohydrates and starchy foods are principally concerned in decay.

Having briefly and perhaps imperfectly answered the queries, and knowing the ability of the gentlemen assigned to discuss the subject, I submit it to you.

Odontalgia.

BY HERMAN PRINZ, ST. LOUIS, MO.

ODONTALGIA or toothache, although seeming to be a very simple affair for treatment by the dentist, often puzzles him considerably as it will frequently withstand all efforts to control it. This is mostly true in cases of toothache caused by reflex actions. Local irritations are usually excluded in such forms and as no exact diagnosis can be made, the medicaments which we have at our command are empirically employed rather than used on rational principles. Diseases of the different organs, as eye, ear, brain, etc., constitutional affections such as gout, anemia, malaria, syphilis, etc. may be accompanied by severe and persistent forms of pain in and about the teeth. On certain points on the face where the nerves leave the canals or come near the surface the pain will be most pronounced. Valliex calls them "painful points" and gives their location as follows: 1. supra-orbital, over the subra-orbital foramen; 2. palpebral; 3. nasal, (internal and superior part of nose); 4. ocular; 5. infra-orbital (infra-orbital foramen); 6. malar; 7. superior dental; 8. superior labial; 9. palatine; 10. temporal; 11. temporo maxillary; 12. mental (mental foramen); 13. lingual and 14. inferior labial. Rapid convulsive contractions, sudden shocks, which have given to this disease one of the names by which it is known—*tic doreux*—lachrymation, photophobia, etc., may come and go with paroxymal frequency and intensity.

To gynæcologists it is a well known fact that morbid conditions of the uterus may be accompanied by emesis and some severe form of odontalgia which results from hyperæmia of the pulp from a true form of reflex action. The pain is of a continual boring character and does not unfrequently end in the destruction of the pulps. The tooth itself is usually affected by that form of caries which we so often find in pregnancy. The treatment in such cases is accordingly more general, etherial tincture of valerian, antipyretics and narcotics may give some relief. After the final stage of the case the toothache usually subsides. During the period of puberty frequently we find young girls suffering from toothache for which no cause can be found; in some cases it

will last for a short period only, in others it will take the regular monthly type. The pain is usually spread about the superior maxilla bone or it is localized in a definite tooth, which appears to be perfectly sound to inspection. The same symptoms may occur in anemic and chlorotic women and girls, being partly due to neuralgia or relaxation of the blood-vessels. Plethora, chronic constipation, and other diseases, causing a check of the circulation will often bring about conditions which may result in severe localized pain in the dental organs.

Treatment in such cases is more of a derivative character. Hot foot-baths and diaphoretic drugs may be administered. Attention should be paid to free movements of the intestinal canal. The late Dr. Rigby employed the following prescription with good results which has our full confirmation :

℞ Sulph. magnesia ℥ j
 Dil sulphur acid ℥ ss
 Purif. iron sulph. gr. viii
 Peppermint water enough . . . ℥ iv

Two table-spoonfuls to be taken in half a tumbler full of water.

In neuralgic pains of the trigeminal nerve, gelseminum (yellow jessamine) in some form may be looked upon as a panacea. J. Stocken gives us the following formula :

℞ Ammon chloride ℥ ij
 Tinct. gelsemin ℥ j
 Tinct. aconite. mm. xx
 Aqua. q. s. ℥ vi.

Sig. One to two tablespoonfuls three times a day.

In such cases we may find not unfrequently the forehead covered with Herpes zoster. The following ointment rubbed twice a day on the affected part will have good effects :

℞ Veratria gr. ii
 Tinct. aconite mm. x
 Vaseline ℥ ss.

Sig. for external use.

Now to come to an end, we will touch slightly on that—ache—toothache, faceache, headache—a conglomeration of aches, so closely connected with our lady patients of this *fin de siècle*. The dentist may be asked for some advice in such cases and will be

greatly obliged by the poor sufferers if we can suggest some remedy which may help to relieve those dreadful pains. A very admirable remedy which has often proven to give the best results in very desperate cases is thus :

R Caffeine citrate gr. vi.
 Salipyrin
 Potass. bromide aa . . . gr. xxxvi.

Make in powders No. vi.

Sig. One powder to be taken 3 times a day. To make it more palatable to the patient, the powders may be compressed in tablets or dispensed in gelatine capsules.

"Dry Socket."*

BY J. Y. CRAWFORD, M.D., D.D.S., NASHVILLE, TENN.

I would like to call your attention to a peculiar condition which I have called *dry socket*, not having any other name for the condition I wish to speak of. After the extraction of a certain tooth, the socket remained open and dry for twelve months. In another case the left lower wisdom tooth was removed with great difficulty. There was no bleeding after the extraction, and the patient complained of more or less pain. I suggested that she lie down in the ladies dressing room and rest awhile. She sent for a physician who gave her some stimulant and she went home, but suffered very much that night. Her physician gave her a strong opiate and advised her to return to me for treatment. Late the next evening she came in. There had been no bleeding from the socket; the jaw was somewhat sore, and the wound clean and nice. That night she had severe paroxysms of pain. The 6th year molar was a dead tooth, on which she had worn a crown for seven or eight years; the 12th year molar was in position. She was impressed with the idea that the pain was in the crowned molar, but I examined it thoroughly and was convinced that that was not the case. The socket of the extracted tooth was still open. I washed it out well with warm water and packed it with iodoform gauze. The next day the gauze came out per-

* Abstract of a paper read before the Southern Dental Association, Asheville, N. C., July 1896.

fectly clean and dry, with absolutely no exudation in the socket. The suffering continued until even the scalp became very sore. The only relief obtained was from the insertion in the socket of cotton dipped in chloroform and then in sweet oil, with a tampon of dry cotton. The patient said she had never experienced such severe pain in the whole side of the face, head and ear.

ABSTRACT OF DISCUSSION.

DR. WM. H. RICHARDS, Knoxville, Tenn., has seen a similar case which was being treated by Dr. Calhoun of Atlanta, by pumping in boracic acid. He had not learned the final outcome in this case.

DR. G. F. S. WRIGHT, Georgetown, S. C., has had two similar cases, Suspecting insipient necrosis he treated with aromatic sulfuric acid, and obtained relief in about two weeks.

DR. H. E. BEACH, Clarksville, Tenn., has had similar cases and had concluded that in the extraction the periosteum or living membrane of the socket had been torn away leaving no tissue from which exudation would take place to fill the socket with pabulum.

In the last case of this kind which he had treated, acting upon this idea, he had determined to do something which would form a clot and therefore cut down deeply through the alveolar process on both sides of the socket. This case healed more rapidly than others in which he had not resorted to this method. The patient described the pain as "worse than four toothaches."

DR. J. Y. CRAWFORD. After the socket, in the case I cited, had remained open twelve months, I curetted the entire cavity, hoping to induce new surgical conditions, but a month later there was no evidence of improvement.

DR. GRIFFITH. In cases of very difficult extraction of the wisdom teeth, there is great strain upon the alveolar plate, and the pressure upon the soft tissues results in injury to the nerve terminals. The distension of the parts is an abnormal condition which interferes with normal repair work. In such cases as those described, to relieve the pain I press the sides of the socket hard together, having the plate sprung in. This pushing of the parts together gives great relief.

The Use of Amalgam.*

BY C. EDMOND KELLS, JR., D.D.S., NEW ORLEANS, LA.

He said : There has been much discussion as to the value of amalgam, but I use it very satisfactorily to myself and to my patients. I see no use in spending hours in packing gold into molars where it is never seen ; a most tedious operation to both operator and patient, and which fails comparatively soon. Life is too short to waste time on such useless work. It is far more satisfactory to spend but a fraction of the time, a fraction of your strength, to give but a fraction of discomfort to your patient and accomplish the same result, namely, saving the tooth, and even more effectually, by filling the cavity with amalgam.

Amalgam is my main dependence in a large class of cases. The less metal there is in a tooth, the better it is for the tooth. Fill the pulp-chamber with cement, and over that place a veneer of amalgam. In places where amalgam would show and not look well, combine gold and amalgam in the cavity. First fill that portion that will be visible, with gutta percha and complete the filling with amalgam. At the next sitting remove the gutta-percha, leaving a nice little cavity with one wall of amalgam, and fill that with gold. I have been doing this with great satisfaction for a long time. There is something in the combination of gold and amalgam that saves teeth better than all gold or all amalgam. There are cases, however, where you cannot use amalgam with as much ease as you can gold, or in very small cavities. In the front teeth there is no choice ; you have to use gold, but you do your patients a kindness not to torture with long sittings for gold fillings in the back teeth. If you take the same pains in the use of gold, you will get as good results. I have some specimens of my methods in amalgam, and also the instruments which I use, which it will give me pleasure to show you. I wash my amalgam in alcohol, and squeeze it in double china-silk.

FROM DISCUSSION.

DR. J. Y. CRAWFORD. What do you think of the liability of the recurrence of decay in a mouth in which the front teeth are

* Abstract of clinical lecture delivered at Southern Dental Association, July, 1896.

filled with gold and the back teeth with amalgam, as compared with a mouth in which only one metal is used, and that metal gold?

DR. KELLS. I think that if the presence of both gold and amalgam in the same mouth has any special effect, it is that it is better for the teeth than all gold. That has been my clinical experience. Life is too short to put gold in the back teeth if it did last longer. If they were good teeth they would not require filling with anything; and if they have large cavities it shows that they were not good teeth and are not worth filling with gold. I use amalgam in the back teeth under all ordinary circumstances.

Hygiene.*

BY G. J. FREDERICH, D.D.S., NEW ORLEANS, LA.

THE usual definition of hygiene—"The art of preserving Health"—is defective, it is more than an *art*; it aims to increase and improve as well as *preserve health*; while the word health itself is too vague to be of much value in this definition. In its broader sense the study of hygiene includes the examination of the condition which affect the generation, development, growth and decay of individuals, of nations, and of races. In its broadest sense, it is co-extensive with biology, including sociology, rather than with physiology merely, as usually stated. The attainment of practical hygiene, *i. e.* the prevention of disease may be attempted in two ways—by the avoidance or removal of all causes of disease, or by making the body less susceptible to the action of those causes. The former is impracticable; the latter is only theoretically possible by working in accordance with the laws of natural selection, and preventing the production of weak and unhealthy human beings—a problem which we shall not live to see solved.

Practically, our immediate surroundings exert a continued influence for good or evil. The details of drainage, ventilation, cleanliness, quality and quantity of food. The mastication and

*Abstract of paper read at the meeting of the Southern Dental Association, Asheville, N. C., 1896.

its digestion under proper mental and physical conditions—exercise, repose and sleep. All of these conditions must be observed to obtain and retain the blessings of health.

ABSTRACT OF DISCUSSION.

DR. H. E. BEACH, Clarksville, Tenn. Cleanliness certainly holds the first place in the science of hygiene—cleanliness of the person, of the premises, cleanliness in all things pertaining to ourselves, to our work, to our surroundings. In the hygiene of food selection, no law can be laid down; it must be selected according to the individual constitution, though much depends upon the manner of its preparation and the ability of the individual to masticate thoroughly, and this is where dentistry comes in, for, too often, in the services rendered by the dentist, too little consideration is given to the masticatory function of the teeth.

DR. J. Y. CRAWFORD. If there is any one subject in which I am more interested than another it is that of oral hygiene; surgical preventive prophylaxis. Dental surgery, in its contributions to the prolongation of life has done more along this line than any other branch of science. I long ago embraced the idea that the various fluids of the body have the function of sterilizing various kinds of food. You have all observed how the lower animals dress their wounds, both their own and those of their young, with the tongue. This oral cavity furnishes fluids which are antiseptic in their character, and, in proper quantity, capable of eliminating from the food qualities which unfit it for the stomach, rendering it sterile and innocuous.

It appears to me probable that in the future, less stress will be laid upon the specific influence of micro-organisms as a factor in disease, and that functional activity, or inactivity, will be found to be the great factor.

Abstract of a Clinical Lecture.

At the clinics of the Southern Dental Association, July, 1896, Dr. J. Y. Crawford gave a clinical lecture on a case offering some interesting features. The patient, a young boy was of a semi-prognathous cast, with a number of retained deciduous teeth,

acute hypertrophy of the gums, depending upon strangulation and requiring removal of the cause, viz: large deposits of tartar which interfere with the process of circulation, inducing a condition of hyperplasia. In regard to the deciduous teeth, Dr. Crawford said: I am often asked "What do you do with baby-teeth that have been too long retained?" Always take them out. This is the result of clinical observation. It is the rule of nature that there are twenty teeth to be shed and replaced. If they remain in, contrary to God Almighty's will, pull them out. In forty-nine cases out of fifty the permanent teeth will erupt, and you don't want to sacrifice the forty-nine chances for the sake of that other one. Remove them at approximately the proper age for them to be removed by nature. Not according to the old tables of eruption, however, for through the influence of our faulty systems of education and diet that time is being retarded. The teeth of American children do not erupt according to rule, but are coming later and later. In the present case, after the removal of tartar, stumps, and baby teeth, make him clean his mouth. And a word right here of clinical importance of which you can make a test in your operative procedures. Why do the teeth of the American human family decay as they do? Because they do not know how to cleanse the oral cavity. Teach your patients how to irrigate the oral cavity. Make them use elbow-grease, common sense and pure water. Make them pass the water through the interdental spaces, and gargle the throat. Make your patient take a hand glass and go to the window so that he can see when he has really cleaned his mouth. Ninety-seven out of every one hundred American citizens do not know how to clean their own mouths.

In the treatment of the present case you will require astringent, disinfectant, antiseptic washes. After he has had a certain wash for a week or ten days, the parts will become inured to it and cease to respond. Then you must change to something else and keep him on that a little while, and then change again. It is the same with topical applications as with systemic treatment. You expend the force of any given remedy after a time.

This patient should be under the observation of a competent dentist for at least twelve months. He has decayed teeth; he has inflamed gums; his permanent teeth have not all erupted. He requires thorough elimination of all diseased conditions. Let this

be your law ; if a patient be under twenty-five and you temporize, and let the patient leave you with some uncorrected abnormality, it will continue to spread and breed continuance. Eliminate all disease.

Clinics at Southern Dental Association.

CATAPHORESIS.

CLINIC by Dr. C. Edmond Kells, Jr., New Orleans, La.

The patient in this clinic was a young lady of about 17, highly nervous, nearly all her teeth badly decayed, never having had any filled. The rubber dam was applied to the superior incisors, a large approximal cavity in the left central being selected for the demonstration. The tooth was exceedingly sensitive and the patient unusually susceptible to the electric current, which could only be increased in the most minute degrees. At the end of forty minutes there was still some sensibility ; the voltage had not quite reached 2—. Ten minutes later 2 volts was reached when the cavity was quickly prepared—painlessly as the patient stated. It was then filled with agate cement. To further demonstrate the advantage of cataphoresis, through comparison, the approximal cavities in the right central and lateral (which has been protected by the rubber dam from the beginning of the demonstration) were prepared without the aid of the electric current, and proved to be exceedingly painful. They were also filled with agate cement. The instrument used was one furnished by Stuart and Adams of New Orleans—a very simple, and as stated by Dr. Kells, a very satisfactory instrument. This clinic case was pronounced by Dr. Kells to be a very unusual one, the usual time required being about twenty minutes with a large voltage of from 10 to 15 volts, to obtain thorough anesthetizing of the cavity.

DR. GEO. A. WELLS, Augusta, Ga., made another very satisfactory demonstration in cataphoresis, using the Van Wœrt apparatus.

The cavity, distal approximal in left lower first molar, was exceedingly sensitive, but was thoroughly anesthetized in twenty minutes, (including an interruption of five minutes) using 10½ volts.

The cavity was thoroughly prepared, and temporarily filled with gutta-percha.

EUCAINE.

DR. C. L. ALEXANDER, Charlotte, N. C., successfully injected the new drug *Eucaine*, hypodermically, for the painless extraction of a left upper first bicuspid.

ROENTGEN RAY DEMONSTRATION.

DR. C. EDMOND KELLS, JR., had with him a Tesla coil and gave several interesting exhibition of the X ray phenomena.

He also exhibited his method of taking skiagraphs of the roots of the teeth in living subjects. By this method a film-holder is made containing a pocket to hold the film as close to the maxilla as possible, and having articulating surfaces into which the teeth bite down holding the film absolutely steady during the sitting. Aluminum is the preferred material for this purpose, as it is almost transparent to the Roentgen rays.

The fluoroscopic demonstration of seeing the bones of their own hands, forearms, etc., proved to be a very attractive feature of Dr. Kell's X ray exhibit.

AMALGAM FILLINGS *versus* ROOT ABSORPTION.

DR. H. E. BEACH, Clarksville, Tenn., exhibited a deciduous molar tooth, which had been filled at a very early age with amalgam. The roots were very completely absorbed, disproving the theory which has been advanced, that amalgam fillings in deciduous teeth prevent or arrest root absorption.

National Museum and Library of the Dental Profession of the United States.*

NEVER was there opportunity more freely offered a profession to demonstrate its value, to acquire a higher rank among the learned callings, to acquaint the professions and the general public with its achievements, and to secure the preservation, classification, exhibition and facilities for the study of all things pertaining to it of present or future historical and educational

* Report of Com. at Amer. Dental Association, Saratoga, Aug., 1896.

value. It would be with great loss of prestige and altogether inconsistent with the general course and progressive spirit of the dental profession if we fail to utilize, equally with other specialists and the general physicians and surgeons of the country, the immeasurable advantages of this institution, covering as it does within a building erected for the purpose all available matters pertaining to every branch of medicine and surgery.

The Museum, in several respects the rarest of its kind extant, contains more than 35,000 specimens, and like the library, is open to the public—the intellectual property of all professions and classes.

Its dental section may be made its most attractive department and the greatest object-lesson of its kind in the world, if the efforts of the management are met with a corresponding interest on the part of dentists. Dr. D. L. Huntington, Deputy Surgeon-General, the chief officer of this institution, to whom this committee is indebted for especial courtesy, has shown the most gratifying interest and encouraging effort in the development of the dental section. He has recently acquired by purchase a number of valuable and beautifully mounted specimens, most of which are rare. He also proposes to transfer to the dental section such objects as are of special interest to dentists which are now classified in other sections or distributed through the large general collection. This will enrich our section with specimens illustrating the effect of various diseases on the maxillary bones and the teeth, and with many other valuable objects which dentists could never acquire from their own resources.

The number of accessions, so far, directly from the efforts of this committee is small—perhaps one hundred. We are pleased, however, to report such evidence of interest on the part of individuals with whom we have corresponded, as to warrant the expectation of contributions of the kind especially needed, namely: series of models, apparatus, drawings, etc., illustrating various operations, methods of treatment and their results. We also hope the leading college faculties will fully illustrate their methods of training, and otherwise utilize the institution to impart a knowledge of the extent and character of college studies and the nature and import of the subjects taught. We are also greatly encouraged by the fact that quite a number of state and local societies have given heed to the action of the American

Dental Association, several formally endorsing its action in the premise and appointing committees auxiliary to this committee. The societies so acting are the state societies of North Carolina, South Carolina, Maryland, District of Columbia, New Jersey, Pennsylvania, Tennessee and Mississippi, and the Valley Dental Society, a section of the Massachusetts State Society. From this large visible results are certain to follow soon.

It is impossible to detail the kind of specimens desired. It is safe to say, however, that anything illustrative of any part of the subject of dentistry, or which would, alone or in connection with other specimens, throw light on the etiology, pathology or treatment of the diseases and deformities of the teeth, jaws, etc., would attain a greatly enhanced value by being placed here as parts of a complete collection.

The Army Medical Library is admittedly, throughout the world, the largest and most complete of its kind in existence. It contains three-fourths of the medical literature of the world and nine-tenths of the medical literature of recent years. There is a constant daily addition to its 120,000 bound volumes, 190,000 pamphlets and 1,200 current periodicals. Its literature is not only greater in volume than the medical literature of either the Library of the British Museum or the National Library of France, but covers a wider field and forms a better practical reference and working collection. The Library has acquired by purchase a large and choice collection of literature in English and other languages relating to dentistry. The voluntary contributions of publishers and authors would permit the money available for the purchase of their works to be used in other conditions equally as essential to the purposes of the institution.

It would be impossible to exemplify the utilitarian purposes of such an institution as the Army Medical Museum and Library or to say in how many ways such a great depository may be made available for the acquirement and dissemination of knowledge. Everything placed there receives and imparts light, and is enhanced in value by association for purposes of contrast and comparison. It affords the only legitimate means of reaching and teaching its thousands of intelligent visitors and advanced students, who come from the various professions and better classes everywhere to return and impart to others the information acquired.

We commend this interest as worthy the sincere, constant and active support of every member of the dental profession, and declare the broad plans of the institution, the liberal spirit of its officers and the generous appropriations for its maintenance ample, with the co-operation of the dental profession, for the purpose of placing dentistry on a higher plane and consummating a work of immeasurable historical and educational value.

We respectfully recommend as a feasible plan of continuing the line of work commenced by this committee, first, the appointment of five members of this Association as a National Committee charged with the duty of promoting the effort to build up a great National Dental Museum and Library; second, that this Association recommend the appointment of committees auxiliary to this National Committee by each of the local, state and other dental societies in the United States; third, that the sum of one hundred dollars be appropriated, to be used with other donations, for the purpose of defraying necessary expenses of the National Committee.

Respectfully submitted,

WM. DONNALLY, Chairman,
H. J. McKELLOPS,
HENRY W. MORGAN, SR.,
J. TAFT.

ALL SORTS.

Porcelain Inlay Work.

Dr. W. A. Coston, Ft. Scott, Kas., placed a porcelain inlay in the buccal surface of a bicuspid so perfectly that it was almost invisible when completed, the new features of the process being to mount a broken piece of porcelain tooth (preferably English) upon a metal stem by means of stick shellac. The stem must fit into the socket of a Porte polisher, which is attached to the hand-piece of the engine; the porcelain is held in contact with a corundum slab or wheel and ground to a perfect cylinder. A variety of sizes can be made in this way. When the cavity in the tooth is made, which must be round, a suitable porcelain cylinder is selected and cemented into place; when the cement is sufficiently crystallized, the little metallic stem is broken away at the point of the shellac attachment and the porcelain stoned down and polished.—*From report in Western Journal.*

The Oral Expressions of Malnutrition.

In a paper on this subject, read before the New York Odontological Society, by Dr. M. L. Rhein, and published in the *Dental Cosmos*, the author takes up the subject of uric acid, and after citing results of investigations by Roberts, Hirschfeld, Ebstein, Horbaezewski, Levison and others, he adds:

"These same authorities have shown that whatever tends to lessen the alkalinity of the blood, favors the deposition of the uric acid, in the form of urates. In all such cases there is a consequent hyperacidity of the system, which is possibly the primary cause of erosion, as has been so ably expounded years ago by Kirk and Darby. Whether we agree or not with the very plausible theory of Ebstein that before the deposit of uric acid in the shape of urates, a necrosis of the tissue with an acid reaction has set in, we are familiar with the fact that in pyorrhea alveolaris there is a scarcity of the elemental corpuscles in the terminal capillaries, and a strong tendency toward a stagnation of these vascular currents.

"Following along the line of Ebstein's theory, we can readily believe that on account of this deficiency of elemental corpuscles in the pericemental tissues, a necrotic area is set up; a hyperacidity of the system being present at the same time, it follows that there is a strong tendency for the uric acid in the circulation to be deposited in this acid necrotic area.

"This view is certainly in accord with the results of recent investigations, and it can also be said that treatment carried out on the basis of this reasoning has been very successful in its results. We can likewise suppose that in those cases of erosion unaccompanied by any pyorrheal condition, the ultimate capillaries continue to obtain a sufficient supply of elemental corpuscles to nourish the pericemental tissues and prevent any retrogressive metamorphosis, which is always the commencement of necrosis.

"Whether these theories of the beginning of pyorrhea complex or of erosion will continue to be held precisely on these lines is not of so much practical importance to the dentist, as is the knowledge that this condition of affairs is merely a symptom of functional disturbance. It is consequently of primary importance that the real disease should be carefully diagnosed before the treatment of the oral symptoms can progress on any rational lines. In this respect the medical adviser should co-operate with the dentist. The fact of discovering a retention or overproduction of uric acid in the blood should be merely the commencement of a differential diagnosis, as it is not sufficient to prescribe a uric acid diluent, in order to aid in its excretion and render its passage through the kidneys more easy, although this treatment is generally of marked benefit to the patient.

"It is, however, of the utmost importance to discover, if possible, whether the kidneys themselves are in a condition of health, or whether some functional disease of these organs exists. If the kidneys are found to be healthy, so that their ability to excrete uric acid is unimpaired, the question of there being present any phase of gout or kindred diseases is at once set aside.

"A large class of cases of pyorrhea alveolaris present themselves to us, where on account of the excessive brain activity there is bound to result a similar excessive disintegration of the nucleins, and a consequent over-production of uric acid. When we get, as we commonly do in these cases, a dearth of elemental corpuscles, a condition of pyorrhea complex results, accompanied by deposits of the urates, because, although the kidneys are able, and do excrete quantities of uric acid, the over-production of the uric acid becomes so great that the urates are very easily deposited in any favoring locality. These are the cases in which, upon urinal examinations being made, an excessive amount of uric acid is generally found. These represent also the cases which are very much improved by rest, travel, and change from the ordinary wearing occupations of life.

"If, however, the kidneys are unable to perform their natural functions in excreting uric acid, a much more serious condition of affairs is presented to us. It is possible, where the disease has not progressed too far, to bring about an improved functional condition of these organs so that they will again excrete uric acid.

"As in such cases urinal examinations before treatment will show no uric acid to any extent, and as up to the present time the blood examinations are very impracticable, it often becomes necessary to try the effect of remedies which will aid not only in tending to dilute the urine, but which will assist the kidneys in excreting the uric acid. Frequently the results of urinal examinations after treatment of this kind has been in progress for some time, will show so large an increase in uric acid that there is left very little doubt that the patient was suffering from a retention of uric acid.

"TREATMENT.—In treating the various forms of pyorrhea complex accompanied with an over-production or retention of uric acid, we should use every means at our disposal to discover the manner in which our patients live, in order to determine what existing factors favor an over-production of uric acid. Advice tending to diminish the disintegration of tissue, and consequently the over-production of uric acid, given to the patient in the proper manner, is of more real benefit than drugs or local treatment. It is unnecessary to dilate upon the necessity of less mental strain, and the refraining from over-indulgence in toxic drugs.

" In this respect great benefit is often obtained by attention being given to general hygiene. While moderate exercise is beneficial, an excessive amount of it tends strongly to over-production of uric acid, and should be carefully avoided.

" In order to diminish the possibility of kidney-diseases, the skin should be stimulated and hardened against changes of temperature. For this purpose, warm baths, followed by cold douches or sponging, with sufficient friction or massage, are very advisable.

" All the old views on the question of diet in the uric acid dyscrasia are set aside by these recent investigations. A reasonably mixed diet is much more to be commended than one in which there is a possibility of the tissues suffering from the lack of some required sustenance. Over-feeding is very detrimental, as it is largely productive of uric acid. On the other hand, it has been demonstrated that the acidity of the system is very much increased by fasting, consequently the advisability of not allowing too long an interval to elapse between meals. The old-fashioned idea of taking no food between eight o'clock in the evening and the following morning's breakfast is remarkably productive of hyperacidity during the night, and may account to some extent for the increased ravages of erosion during the hours of sleep. No more fitting time for the introduction of some food into the stomach can be found than immediately preceding rest. Hence the advisability of a light meal before retiring.

" It is unnecessary to mention the ill-effect of such drugs as alcohol in the excessive production of uric acid, and the over-indulgence by the patient in any favored article of food which has a tendency in this direction.

" Where mental over-exertion is the cause, too great stress cannot be placed upon the benefit resulting from sound sleep, which must be obtained at all hazards.

" Outside of these general directions for the manner of living, the remainder of the treatment of such cases, from a constitutional standpoint, should be left to the medical adviser, though mention might be made of the valuable results frequently obtained from the proper use of sedatives.

" It is not my purport to enter into any detailed description of local treatment. Each case must be carefully considered, and treated in accordance with the conditions and symptoms presented, and cannot be used as a proper indication for the treatment of a subsequent case.

" It might be well to lay down a few general principles for the local treatment of pyorrhea alveolaris :

" Make a careful diagnosis of the condition of the pulp of each tooth in the infected territory.

"In case of the death of any pulp or the approach to such devitalization, the first step is the cleansing, sterilizing, and proper sealing of the root-canals.

"The next step is the thorough removal of all deposits from every portion of the roots; and it is not my intention to discuss the details of this most important phase of local treatment, nor the various forms of medication required to remove the necrotic zone of tissue and produce new and healthy granulation.

"Loosened teeth must be held in a firm position, in order to obtain beneficial results.

"Missing teeth must be replaced by artificial substitutes, introduced so as to produce the least possible irritation upon the soft tissues.

"It is of great importance that the occlusion of all the teeth should be as nearly correct as possible.

"And lastly, the most thorough directions should be given to the patient in regard to the local hygienic care of the teeth and the mouth generally. This should not only apply to the keeping of the teeth and gums free from the inroads of micro-organisms, but attention must also be given to keeping the tongue and the pharynx in the same sanitary state.

"With this object in view, frequent use of sterilizing sprays cannot be too strongly advocated, and in cases of fissures of the tongue, the patient should be instructed to use a tongue-brush moistened in a suitable sterilizing fluid." . . .

Dr. Rhein then describes ten cases in practice, after which he adds:

"The history of all these cases shows their undisputed origin to be from nutritional disturbance. Many of them have been a great aid in the proper diagnosis of such disturbances; and what is of the most importance is the fact that the attention to the improvement of the local symptoms, and restoring the proper function of mastication, has tended very materially toward improving the general health of the patient."

Shock and Strain.

"The extraction of teeth is so common an operation, and is usually performed with so little preliminary investigation into the physical condition of the patient, that it may almost be a matter of surprise that death—the result of shock following this operation—is not a fairly common occurrence. So great a rarity is it, however, that we do not remember to have met with the record of such a case till the present month. Doubtless some have, previously occurred, and may probably be found

mentioned in dental literature, but the untoward event is fortunately rare enough to merit more than passing comment. This patient had suffered severe toothache for some weeks, and finally decided to have the tooth, a molar extracted. Two minutes after the extraction she became "collapsed, and died." No chloroform or other drug was used, and the post-mortem examination showed that there was fatty degeneration of the heart, and that the death was due to syncope. Such is the brief report to hand, and it may well suggest to each the thought, is such an event likely to occur in many instances? Experience proves that it is not, but still it does teach us that the use of a safe anæsthetic, such as nitrous oxid which undoubtedly lessens shock, is not so purely a luxury as is sometimes thought. That the wrench occasioned by the removal of a tooth is followed by a certain amount of shock is the personal experience of most but it is usually light and transitory in healthy subjects; still, in those diseased or debilitated, we may learn from the foregoing case that the result may be serious. In others, though the result is not so lamentable, shock is not transitory, and this is the explanation, doubtless, of those complaints, not rarely made by sickly patients, that for days or weeks they felt the effects of the operation. In some cases this may have been ascribed wrongly to the anæsthetic which was employed, for, although this doubtless lessens the effect, yet it does not always entirely prevent it. especially when the anæsthesia is partial. It is, indeed, a question how large a part shock may have played in the large number of deaths which have occurred unfortunately during the administration of drugs for anæsthetic purposes. This is suggestive of the query, whether, in sickly patients, the removal of a large number of teeth—granting for the sake of argument, this is sometimes required—is a wise proceeding. The effects of shock, as everyone knows, are commonly due to stimulation of the Vagus nerve, so bringing into play an inhibitory force. But there is another class of cases which are not so easily explained, and which may be, perhaps, more correctly referred to as nerve strain rather than as shock. When this condition follows dental operations, these have usually been prolonged, continuous, and probably painful. It is no rare thing to have patients refer to some past time, when they were having their teeth put in order, as an experience they would never again repeat, and which had made them feel nervous and worn out for months. Inquiry usually elicits the fact that they had sat in the chair for hours consecutively, and had attended day after day. Well may we ask is this a desired result? Is there no simpler way, no less wearing method of treating the teeth of such delicate highly strung patients? Is it wise practice to attempt elaborate work, lasting for a few years, at the risk letting the teeth be neglected for many years? Has not the practitioner rather over-

looked the fact that he is not dealing with an inanimate object, and that it is as important to read correctly the character and endurance of his patient as it is to aim at mechanical perfection?"—*Editorial Dental Record*.

Root Canal Treatment.

In a contribution to the *Dental Cosmos* Dr. Adam Flickinger states:

"The first step in the treatment of these teeth is to gain free access into the pulp-chamber and canal or canals; then, in order that I may not force any of the contents through the apical foramen (causing additional trouble frequently harder to combat than the original one), I remove the contents carefully, using a nerve instrument 'home-made for the purpose,' washing with warm water, and the sulfuric acid treatment so often described. In cases of tortuous canals much can be accomplished by sealing into the canals a ten per cent. solution of the acid for a day or so.

"Having obtained a free and unobstructed passage, I apply the dam or other means of keeping the tooth perfectly dry, proceeding, if any abscess exists, with the beechwood creasote treatment, pumping it up and into the canal until it makes its appearance through the fistulous opening, after which I apply an electric wire attached to the alternating current and controlled by Holekamp-Moore, Grady & Co.'s alternating current controller, gradually increasing the heat in the ratio of thirty-four degrees to the minute. I then proceed with thymol or cassia, preferring the former for the anterior teeth, and apply the current again and again until every particle of oil is absorbed by the tooth.

"When applying the current to the oil you will observe minute electrical sparks flying in all directions; the heat alone should be sufficient to destroy microbes, bacteria, or any other kind of germs present.

"I then fill the upper or apical part of the root with the following preparation, in the form of a paste composed of alum, thymol, glycerol, oxid zinc. Placing a small piece on an old broach with barbs removed, I work it up, not being over-particular how far; then take a small piece of heated gutta-percha, force it into the canal, which drives the preparation ahead, thoroughly filling the canal and sealing it better than any other preparation with which I am familiar, not excepting chloro-percha, oxyphosphate, wax, paraffin, etc.

"For teeth and roots containing putrescent pulps, with no external opening or abscess, I use the same treatment, discarding, however, the creasote or carbolic acid, and proceeding with sulfuric acid, oils, and electric wire.

"This method I have adopted in all cases, have used it in all conditions and stages of inflammation and ulceration, in acute and chronic cases. I have treated and filled root and tooth immediately, where a slight periosteal inflammation and swelling of the face still existed. In one case the tooth was so sore to the touch that it was impossible to use the mallet, yet I filled the root as described, and the tooth with gold, by hand-pressure; and to the great satisfaction of both myself and my patient the swelling and pain subsided after twenty-four hours, and to this day the tooth is doing well."

Treatment of Oral Acidity with Milk of Magnesia.

Dr. Williams Donnally gives his method, in *Dental Cosmos*, of treating cases of white decay about the gum margins, acid erosions, etc.

"For about three years I have modified the treatment of such cases only by adopting a more definite course of treatment preparatory for or to preclude the necessity of filling, and by the substitution of the milk of magnesia for all other antacids. In cases of the kind described it is my custom to cleanse the surface and apply nitrate of silver by means of small pointed sticks of wood, repeating until the abraded surface is stained and hyperesthesia relieved. The surface is then smoothed, if necessary, and burnished, the general condition of the teeth looked after, the care exercised by the patient inquired into and approved or corrected, and then the faithful daily use of milk of magnesia enjoined. It depends on the habits of the patient and the urgency of the case whether the use of the milk of magnesia through the day is insisted on, but in every case the necessity for its use the last thing before retiring at night is forcibly impressed, not only because any such agent is less effective in consequence of the more abundant secretions and the ordinary use of food and liquids during the day, but because the acidity is more marked at night, and its action prolonged without interruption for a much greater length of time.

The direction for the application of the milk of magnesia should include an effective means of coating the whole mucous membrane of the oral and buccal cavities, as well as the surfaces of the teeth, and the patient's effort to avoid the removal of the film formed.

This method of treatment will be found noticeably effective in retarding rapid decay of the teeth, and is especially serviceable to me in cases of children or timid persons of any age. In the two classes of cases described the need of more effective measures was particularly impressed, and the results have been so much more satisfactory than was at first trial expected that I feel I have accomplished a notable gain over former experience."

Shock.

DR. GARRETT NEWKIRK presented a paper on the above subject to the Illinois Dental Society and from the proceedings in the *Dental Review* we extract the following:

"We are much inclined to treat patients as children are treated in the schools, all the same by a stereotyped plan, regardless of individualism. This is all wrong, and here we must reform.

One cannot judge of the fact or the degree of shock by the voluntary acts or movements of the patient, but as Dr. Black has well said, the patient "may be possessed of a calmness that is entirely unnatural." There may be no movement, voluntary or involuntary, to indicate that serious consequences are being evoked by the operations in progress. If the dentist shall fail to bear in mind the temperament and susceptibility of his patient, and, being all engrossed in the mechanical execution of his work, cease to be observant and watchful, he may come to the realization very suddenly that he is responsible for grave complications.

The immediate danger in shock appears to be in its relation to the vascular system. Through temporary paralysis of the vaso-motor nerve centers, there is extreme dilation of the arterial vessels generally, and it is supposed that in fatal cases death results, not so much from failure of the heart to act, but because blood is lacking for the heart to act upon, and, as Dr. Black remarks, the patient "bleeds to death without the loss of a drop of blood." The heart is emptied into the relaxed blood vessels.

Therefore, the first and most prominent symptoms of shock pertains to the circulation of the blood. There is first pallor of the countenance, a weak and small pulse followed by dullness of the senses, a staring eye, numbness, coldness of the extremities; lack of will and muscular power. Questions are answered by monosyllables or not at all, there is partial or complete loss of consciousness, in short, collapse.

In this connection, I desire to mention a cause of shock as I believe which has been but little recognized as such, namely, the action of drugs. I have a patient who exhibits all the primary symptoms of shock if a bottle of chloroform be opened in the room. A friend of mine has a patient similarly affected by camphor. These are examples of idiosyncrasy, but there are agents, deadly poisons we call them, which cause death apparently by shock pure and simple. They so impress and suddenly paralyze the vaso-motor centers that the heart is bled to death by the relaxed blood vessels. Possibly this is what cocaine and other agents of that class do.

We must be on our guard at the chair, avoiding protracted operations with those who are unfit to undergo them, whether by reason of

temperament, idiosyncrasy, nervous exhaustion, anæmia, or what not.

If a patient comes to us who has had trying experiences, unusual stress of toil, grief, anxiety, or previous illness, one whose vital tone is low, with susceptibilities acute, *beware!* Keep to the safe side and avoid *shock*. If, however, in spite of precaution a case of shock shall overtake us, our remedies are suggested by our pathology. As the great vessels of the abdomen and lower extremities are the chief reservoirs of blood in cases of shock collapse, inversion or semi-inversion of the body is of first consideration. Call on gravity at once to throw the blood to the heart. If this is not sufficient apply heat to head and spine, hands and feet, ammonia to the skin and nostrils or internally, kneading of the muscles, etc., etc. Electricity, if available, might be useful when other means prove inefficient. But, as dentists, *avoid* producing the condition, and remember first of all that our greatest danger lies in the line of accumulative causes to belong to prolonged sittings and exhaustive operations.

I believe that the great majority, if not all, of dentists are guilty, more or less, of malpractice in this direction.

Patients not knowing themselves, request or even demand prolonged sittings which ought not to be given them. Mothers bring their daughters, semianæmic it may be, at a critical time of life, and ask that we shall do a certain amount of work for them in a limited time. We operate for one of these, say thirty or forty minutes. She endures so much very well. But we may see if we are observant that she has about reached the limit of nervous endurance for that time. If we discharge her now, she will easily recover from the limited shock experienced, and she will return cheerfully for her next appointment. But the mother says, "I am anxious to get through with this work. I cannot spend so much time for short sittings. While she is here put in another filling." If we say *No!* we deserve a medal. If we yield to please the mother, and because we have the time which we would otherwise lose, we deserve to be horsewhipped.

But it even more frequently occurs that the mother will ask or demand for herself operations beyond the limit of prudence.

It is my opinion that extra susceptible children or young people should not be kept in the chair as a rule more than half an hour at a time. Adults (usually they are women) not more than an hour, as much less as may be. We prepare too many cavities and fill them at one sitting. We do not use temporary stoppings of gutta-percha as frequently as we should, waiting for recuperation from shock. We think possibly not too much of teeth, but too little of the individual behind the teeth.'

Concerning Vulcanite.

From an article in the *Cosmos*, by Dr. C. A. Allen, we abstract as follows:—If the stratum of atmosphere inclosed in the pot above the water line (when the cap is adjusted) is not expelled upon a degree of heat sufficient to generate steam being reached, we can always confidently rely upon our thermometer registering from 15° to 18° F., according to the amount of water, below that actually existing within the chamber. Not only this, but we must always be prepared to take into account a considerable loss of registering power of the thermometer through the radiation of heat, the connection of air currents, temperature of room, etc. To these influences you can always safely charge a loss of registering power of the thermometer of at least 15° F., and usually more, often 20° F. If these figures can stand verification, and I declare that they can, what will be the result? Simply this: the man who does not expel the atmosphere from the pot really subjects his case to at least 30° F. of temperature more than that indicated by the thermometer. If he does expel the atmosphere he still has 15° F. more than that registered. From this point our deductions are easy. We have declared that the destruction of vulcanite begins at 300° F. actual. As an illustration of this point, let us imagine a case being treated at the old-fashioned 320° F. without regarding these two influences. The result is easy. Instead of 320° F. we have at least 350° F. If the stratum of atmosphere *is expelled* we still have 335° F. to which our case is being subjected. If these figures and those preceding them are correct, we find ourselves treating vulcanite anywhere from 50° F. down to 35° F. above where the destruction of the compound actually begins. We are now asked what will be the manifestations of this unscientific treatment of the most abused and least understood body in the dental world. Every child in the land associates with rubber the property of elasticity, and that to the degree of exceeding in this respect any other body known to him. Do the high temperature plates retain this characteristic? By no means, and, on the contrary, they have entirely lost it. Why? Because the extreme temperature to which they have been subjected has destroyed this natural inherent characteristic.

The early workers of vulcanite will tell you that to-day we cannot produce a plate which can be constricted at the heels, as they "used to do," and thereupon see it return to its former relations. The reason for this is obvious. The pioneers in vulcanite were instructed to vulcanize at a low temperature, about 280° F. Besides this, the machines placed upon the market at that date were so constructed that the heat was carried up and redirected upon the pot, thereby losing but little by the con-

vection of air currents and radiation. If this be true, we now have to account only for the loss of the registering power of the thermometer by virtue of the stratum of air left in the pot. We have stated this in degrees to be equal to 15° F. to 20° F. This reasoning will easily solve the true degree of heat to which the case was subjected, and at the same time demonstrate why that property of elasticity was not lost in the work of the vulcanite pioneers. The next manifest injury to the base for our purposes will be in its extreme contraction. It should be borne in mind that vulcanite is affected by thermal changes more than any other solid body. Its rate of expansion in ordinary temperatures is somewhat over six times that of iron, about five times that of brass, and nearly four times that of zinc. This extraordinary expansion upon the application of heat will conversely manifest itself by contraction when the opposite thermal condition is applied. How and where will this extreme contraction be manifest in dental plates? If your case be of the stupidly contrived "gum sections" it can express itself only at one point, namely, by a contraction at the "heels," and a consequent raising of the body from contact with the model, most manifest at the posterior part, but really extending itself well anteriorly. How can this be demonstrated? There is but one way. Preserve your model after vulcanization, and restore the plate to it, when the extreme degree of contraction will be only too manifest. The base will have no manner of contact at its posterior part with the model upon which it was vulcanized. This contraction in case of the use of "gum sections" with properly ground joints must necessarily be at the rear, as the arch cannot be crushed. In the use of "plain teeth" the contraction is diffused throughout the entire plate, and consequently does not appear so prominently at the point mentioned.

The question may be asked, "How can the model be preserved?" This is perfectly easy. As soon as the temperature is reduced to the proper point, open the flask, remove the denture from the model, and at once place the model over a gentle heat for a time sufficient to expel all moisture.

Another result of excessive temperature in vulcanization, and the inevitable contraction in the molecular rearrangement which will follow, may manifest in cracked sections or "chipped" joints.

Still another condition may present the case with one or more "spongy" points, usually to be expected at the thickest part of the body. The writer's deductions from the foregoing are that all bodies of vulcanite treated at a temperature above 300° F. (actual) will show—

1. Destruction, increasing proportionately with temperature elevation, and loss of elasticity.

2. Extreme contraction, resulting in the plate having no membranous contact across the posterior part.
3. Broken or cracked sections, or "slivered" at joints.
4. Sponginess of vulcanite at thickest portions, which may be manifest over a considerable surface, or may appear only at certain points in size and shape quite like a split pea.

Remedy.—Any or all of the foregoing results may be obviated by maintaining a temperature within the vulcanizing pot throughout the entire period which shall not exceed 300° F.

On Some Unusual Forms of Abscess.

Lately we have been brought face to face with some unusual cases of abscess, unusual because the teeth that were pulpless gave rise to but one fistula. One of these came from a central and lateral incisor and another from both centrals and a lateral. The difficulty of diagnosis was on account of the fact that the fistule seemed to proceed from only one tooth and there was no apparent reason for supposing that the pulps were dead. Even the electric light failed to prove that the pulps were dead. Recently a case that had passed through the hands of three competent dentists was presented, with an abscess from both roots of an inferior molar. After the roots were cleansed, sterilized and filled, the fistule—weeks afterward—had not closed. All of the root filling was removed and the treatment repeated, including the filling of the roots again but to no purpose. Upon testing the adjacent bicuspid the pulp was found dead and the fistule leading from it opened directly through the other opposite the molar. The point we wish to make is that frequently pulps in adjacent teeth are dead without any visible external sign to guide the examiner. In all such cases a careful test of the teeth is necessary to positively cure the fistule which may be opposite the root of a tooth previously treated. It is apparent that any one might make a mistake and drill out the bony tissue around the apex of a root on the supposition that caries or necrosis was present, when a little careful search would prove that the adjacent tooth being pulpless was the cause of a fistule not closing up after a reasonable lapse of time.

Abscesses are more or less troublesome—alveolar abscesses—and he who thinks that all of them remain in a state of perfect salubrity after treatment is liable to be mistaken ten or fifteen years later, after a single sure shot treatment has been practiced. Incomplete sterilization, and incomplete root filling are the barriers to success.—*Editorial Dental Review.*

A New Device in Crown- and Bridge-Work.

In this method an assortment of bicupsid and molar cusps is the important factor. These should be shell cusps (not solid), and may be made by taking impressions of natural teeth in moldine, running metal dies, and striking up in the ordinary way, using for the cusps alumnium or any metal which the operator may prefer.

Impression compound is now warmed and placed over the wax. A cusp corresponding in width to the molar facing and in form to articulate with the occluding tooth above is selected from the assortment, placed in position on the soft compound, the articulator closed together, and the cusp forced into position. The bicuspid is now treated in the same manner. If the compound has become hard in the meantime, simply warm the cusps. The metallic cusps are now removed, which may be easily done if the compound has been previously coated with French chalk or vaseline. This brings to view perfectly formed cusps in impression compound, from which, after it has become hard, an impression is taken in moldine as they stand on the model, a metal die run, and the three cusps struck up in one piece out of gold. These gold cusps are now placed on the model, occupying the same position as the trial cusps which were removed. It may thus be readily seen that if the gold cusps are made the same gauge as the trial cusps, a perfect articulation is assured, the thickness of the gauge of gold even, not intervening, the gold cusps having simply replaced the trial cusps. While if it were desirable to prevent the molar from occluding with the tooth above, leaving only the bicuspid to act, a thicker trial cusp (say 28 gauge) might be used for the molar and 30 gauge for the bicuspid, the whole being replaced by 30 gauge gold cusps, which would leave the molar a trifle shorter (the difference between 28 and 30 gauge). The whole bridge, after being properly waxed, is removed, invested, and soldered as usual, the work being accomplished artistically as well as quickly and accurately.

In crown-work this method may be used in the mouth or on the model. The band is made as usual and put on the tooth. The occluding end being filled with soft impression compound, a cusp is selected to suit the case, pressed into the compound, and adjusted to articulate perfectly with the occluding tooth. It is then removed, the compound trimmed around the edge of the band if necessary, an impression is taken in moldine, a metal die run, and a cap struck up and soldered as usual.

Absolute accuracy of the trial cusp as to size is not a necessity, for if it be too large the cusp which it has formed in compound may be trimmed to remedy the deficiency, while, if necessary, the form of the trial cusp itself may be altered.

For cusps aluminum works quite well, although any malleable metal may be used to advantage.

In making these cusps, extracted teeth may be used to form the dies, their decayed portion being first restored by compound; while if the tooth be first slightly coated with vaseline before taking the impression in moldine, the metal die formed will be more clearly defined. This also applies to the female die (if one is used), if the male die is first coated. —H. C. SPENCER, *Cosmos*.

Methods in Practice.

IN the *Stomatological Gazette* Dr. A. C. Hart says:

“I presented this case because of the peculiar condition present. It was a case of irregularities that came to me for treatment. There was no articulation. The teeth struck on points and there were exposures of five pulps. Patient came to me from a country hospital and wanted the teeth extracted. I removed all the pulps, filled the teeth and articulated them the best I could, then took impression of the mouth; not as you ordinarily do, because I could not do it properly in that way. You can get an excellent impression by taking the lower impression tray for a partial set, filling it with modeling compound and cutting out the pieces following around the edge, then put in the impression tray and take an upper and lower impression with the lower tray. I then cool in water and take it out of the mouth and approximate the articulation. I articulate and approximate these casts in my hands. Where they do not strike right, I go over the teeth and grind away, and I use articulating paper. The skull I borrowed from here has been of great assistance to me, and I have studied it very carefully. If you notice the articulation of teeth, the bicuspid serve to hold the bite. Where patient loses the bicuspid he loses the bite. The molars will tip if the bicuspid are out, and the teeth will loosen and get out of position. This wearing away on the upper jaw, you will notice, in the distal portion of the twelfth-year molar is square and rounds back to a point. Where the first and second molars meet it is a curve and flat in front. That serves to throw the food out. The bicuspid approximate to them and decay mostly on the distal surfaces. The first bicuspid rarely decays in its mesial aspect. If it does, it is generally due to some congenital defect. I claim that the articulation of the teeth is one of the chief causes of decay. The gum is higher up on the molars than on the bicuspid, and I think that the reason why molars do not decay is that they set lower in the gums. When I insert a bridge I shorten the bite. I know that it is radically in opposition to the

text-books, yet I do it. In this young lady's mouth the teeth had been extracted indiscriminately. The bicuspid and cuspids were moved forward and the lip protruded. I cut off these teeth and prepared them for crowning. In the treatment of pyorrhea I use Dr. Payne's anesthetic. I find that one of the most potent causes of pyorrhea comes from the mal-articulation. The patients are not meat-eaters. I tell them to eat plenty of meat and drink lots of water. I inject Dr. Payne's anesthetic on both sides of the tooth and up to the apex. Then I use a lance and make an incision longitudinally to the apex and wash out with purifine, and then I can see what I am doing, and can scrape thoroughly. Then I take a lance and puncture the gum thoroughly to the apex, until it looks like the top of a pepper castor. In hospitals they do this to make bone deposit. When I asked a doctor at the hospital why this was done, he said that it brought a quantity of blood there, and that brings tissue and deposit of bone. I found it so in the treatment of pyorrhea. This girl's teeth were all loose, and she wanted them extracted. I followed that process religiously and got the teeth cured. On the outside of gums I used a hæmostatic. When the bleeding is completely stopped I dry the gums carefully with bibulous paper and put on campho-phenique, then I dust on powdered eucaphen. It will stick there three or four days. I also put it on the neck of the tooth. I send patient away with an antiseptic tooth-wash."

Treatment of Abscess.

Dr. A. H. Peck gives his method in the *Dental Review*, as follows :

"The cardinal principles to be observed in the treatment of any abscess, whether general or alveolar, are free evacuation of the pus, continued and adequate drainage in connection with proper aseptic treatment. When it becomes necessary to incise an alveolar abscess for the purpose of drainage, the incision should be made in all cases when it is practicable at the most dependent point of the pus sack, said opening should always be large, not small. Having freely drained the pus by careful digital manipulation, and the tooth is not too tender to continue the work, all debris should be thoroughly removed from the root canal or canals, as the case may be, and the opening through the end of the root made positive. Carbolyzed tepid water should be forced through the entire tract in sufficient quantity to thoroughly cleanse the pus cavity. I prefer carbolyzed water for this part of the cleansing process, chiefly because of the soothing anæsthetic effect that the carbolic acid imparts to the soft tissues involved.

This should be followed by a similar use of peroxide of hydrogen, or

of a 3 per cent. solution of pyrozone, according to the operator's liking. A thread of cotton saturated with a suitable antiseptic (and it doesn't matter so much what the agent is) should be placed in the root canal, and the cavity sealed. If the work thus far outlined is thoroughly done, nine out of ten, and I feel safe in saying ninety-nine out of every hundred cases of acute alveolar abscess will heal without further interference, either surgical or medicinal, provided the systemic conditions, the recuperative powers of the tissues involved, approach anything like the standard that is normally expected of them.

If the inflammation of the different parts is so intense as to render impracticable further work than the mere evacuation of the pus at the first sitting, the edges of the incised tissues may be saturated with a moderate amount of carbolic acid, 95 per cent., which will prevent the healing of the opening for some days. Dismiss the patient until the inflammation and the tenderness subside.

In cases of blind abscess, it is necessary to evacuate the pus through the medium of the root canal. Sometimes this form of abscess causes a great deal of trouble to the operator. When connected with the root of a tooth whose canal is small and tortuous, oftentimes it seems impossible to effect an opening through the foramen of sufficient size to allow free, unimpeded drainage. Having failed by the use of all other means to effect the desired opening, I never hesitate to make use of the sulphuric acid treatment—the *modus operandi* of which has often been discussed in the journals and also before this society.

The necessary opening gained, the treatment resolves itself, in the majority of cases, into a very simple matter. The pus will readily flow through the foramen into the root canal where it may be wiped away. The evacuating process should be facilitated by gentle, firm pressure with the fingers on both the lingual and labial or buccal surfaces of the alveolus opposite the pus pocket. This should be continued till the pus has been completely removed, or as nearly so as possible.

Having wiped it from the canal with absorbent cotton the tract should be thoroughly cleansed with peroxide of hydrogen, care being exercised not to force an undue amount through the foramen into the abscess cavity. The canal being thoroughly dried, an antiseptic on cotton should be placed into it, and with some pressure, so as to force the medicament through the foramen into the pus cavity. The tooth should be sealed tightly in the majority of cases, and the patient dismissed for a day or two, or a week, according to the nature of the case.

Only in the very worst forms of this trouble, those in which I am satisfied that gases will continue to be generated would I fail to seal the cavity tightly. This form of treatment must be gone through with as often as may be necessary to effect a cure."

Process of Making a Lower Partial Plate when the Posterior Teeth are out on Both Sides.

It consists of a plate with a clasp on the buccal surface only, and a swaged aluminum band vulcanized into the rubber which attaches the posterior teeth. After taking an impression I fill with metal (moldine), being careful to get an exact copy of the lingual surfaces of the remaining anterior teeth and the gums and gum margins. Then I make a counter die and swage an aluminum band to fit the lingual surfaces, having points of aluminum fitting into the interproximal spaces—this is of the utmost importance. The ends of the band should extend far enough back into the rubber on either side to give a firm attachment.

Then fit a band of clasp metal to the buccal surface of the teeth, proximating the denture on either side, and having the inside end of the clasp to fit and extend around the distal surface of the tooth till it touches the aluminum band and fits up to it.

The aluminum band or strip which fits the lingual surfaces of the teeth intact should be tempered to make it springy, and when the plate is pushed to place the points of the band drop into the interproximal spaces, and, with the clasps on the outside of the teeth next to the artificial denture, it makes a very comfortable and well adapted plate.—J. F. FRIBLEY, *Dental Digest*.

Case in Practice.

The patient, a man about thirty-five years of age, presented himself for consultation. His trouble consisted in, what purported to be from the history gained, an abscessed superior lateral incisor, which from time to time became sore. This was followed by a tumor in the dome of the oral cavity, which continued to increase during periods of varied duration. At length it would disappear, or nearly so, to be followed by the same phenomena, after intervals of three or four months, longer or shorter.

At the time he came under my treatment the tumor was about the size of a large chestnut, and situated about midway between the line of the hard palate and the incisors, filling this region, being fully three-quarters of an inch in diameter. Upon examination, fluctuation was distinctly manifested, but pulsation could not be detected. Reasoning from this that the tumor was the result of the dead lateral tooth, it was decided to open the sac and evacuate the pus. Proceeding to do this with a narrow curved bistoury, an incision the width of the blade was made. The flow of blood which followed this was so great that it caused a doubt to arise as to the correctness of the diagnosis, and the knife was withdrawn

without ripping open the tumor, as was first intended, no pus following the removal. The gush of blood revealed the true nature of the tumor to be that of an aneurism, requiring very different treatment from that of an abscess. It was well that the sac was not laid open, for the hemorrhage was very profuse and difficult to control, with the small incision made. Had the walls of the sac been relieved of the tension caused by the pressure upon them from within, greater difficulty would have resulted.

The treatment in this instance, after using a solution of persulphate of iron, which did not prove a permanent coagulant, was to wipe the entire inner surface of the sac with equal parts of the tincture of iodine and a 95 per cent. solution of carbolic acid. This proved a good and sufficient coagulant, which arrested the hemorrhage permanently. A cure resulted, as there has not been a recurrence of the trouble since the treatment, a period of nearly eighteen months.

A word of caution is not out of place here with regard to diagnosis in these cases. Introducing an aspirating needle, and drawing away some of the fluid contained in the sac, would usually give true conditions, even if pulsations could not be detected, as was the condition in this case.

—I. A. FREEMAN in *Dental Digest*.

Impressions of Special Cases.

A method I have of taking impressions when the ridge is hardly perceptible, and the muscular attachments are so near together on the top of the ridge that there is hardly a line of space where the plate could rest undisturbed by the action of the muscles in movements of the jaw and in mastication. In such cases I exercise care in taking the impression, having the plaster not too thick, and just as soon as the cup can be inverted without the plaster dropping out I at once put it in place in the mouth, requesting the patient to move the jaw as in the process of mastication, and being careful to hold the cup firmly when once in place and to follow each movement.

This is kept up until the plaster is of a putty-like consistency. Then, of course, the jaw can come to rest, as there can be nothing gained by keeping up the movement.

After removing the impression from the mouth in time there are to be seen small grooves, depressions and elevations, which correspond exactly to the muscles, depressions and elevations of the ridge of the jaw, and when the plate is made it will fit perfectly and not be displaced during the process of mastication or in other movements of the jaw. In partial lowers I use the same precaution in taking the impression as in full cases where the same conditions exist.—J. F. FRIBLEY, *Dental Digest*.

Chinosol.

In a former issue of the *Journal* we referred to chinosol, a sample of which had been sent to us also by Messrs. Kuhn. An extended use of this drug tends to show that it is an extremely useful and effective antiseptic, and in all cases in which it has been tried it has led to excellent results. Chinosol is stated to be the most powerful of all known antiseptics (an aqueous solution, 1 in 80,000, at once arresting the development of the staphylococcus pyogenes aureus). In addition to this it is (1) non-caustic and non-toxic; (2) very diffusible; (3) a non-coagulator of albumen; (4) non-volatile. All things considered, we think chinosol well worthy of an extended trial in dental practice.—*Jour. Brit. Dent. Association.*

How far beneath the Gingiva should a Band be Extended?

No matter what the age of the patient, or degree of recession of the investing tissues may be, extend the band beneath the gingiva sufficiently only to subserve the purpose of a band. Extend it an equal distance, at all points, beneath the edge of the gingiva, and a safe distance from the line of attachment of the peridental membrane.

Give nature a chance, where conditions are favorable, to reattach the membrane. Give her a chance to replace the gingiva, in its normal position.

The great fault lies in extending the band too far beneath the gum line; believing ample extension necessary to prevent ultimate exposure; losing sight of the fact that in so doing you are encroaching upon, and even detaching the peridental membrane.

The farther it is extended, the greater will be the difficulties encountered; the soft tissues will be lacerated, materially impaired, the tooth improperly shaped, and a poor fitting band the immediate result. However perfect nature may, in a few weeks, conceal this fallacious condition, the very perversion you have endeavored to prevent, will be the least that may follow, inflammation, recession and decay.

To obtain the best results, the gingiva should be temporarily dilated and receded before preparing the tooth to receive a band, and before setting a crown. This can be readily accomplished by twisting absorbent cotton on a waxed ligature, and tying it around the tooth against the gingiva the day before operating. The gingival border of the band should not only be in the proper relation to the line of attachment of the membrane, but it should also be dressed to a thin edge, and fit snugly to the tooth on all sides. When the surface of the tooth to receive a band,

cannot be made convex in a line parallel to the border of the gingiva, the band should be burnished to fit this concavity. But if the concavity is in the form of a deep fissure, it should be filled with gold or amalgam.—
R. J. WENKER, *Dental Review*.

The Care of the Teeth.

No meal should ever be partaken of without immediately thereafter rinsing and washing the mouth with clean, clear water, if nothing else, and obviously the addition of some pleasant antiseptic, like Euthymol, is preferable. So, too, this act should be succeeded by a thorough scrubbing of the teeth with a moderately stiff brush, passed both laterally and perpendicularly over front and back surfaces alike; not even the most microscopic quantity of food should be allowed to remain in the interstices of the teeth or about the gums. Such a measure, if carefully carried out with the aid of a strictly antiseptic dentifrice, will prove not only a means of warding off offensive breath and the many maladies common to the gums and teeth, but will eradicate tartar and retracted gums.

Some dentifrices are really valuable; others are harmless; not a few are dangerous. In the latter connection, too great stress cannot be laid upon the fact that any article intended to be utilized for the toilet of the teeth, and which presents an acid or markedly alkaline reaction, is to be regarded with suspicion. Those applications for the teeth which are warranted to immediately whiten are always dangerous, inasmuch as they rely upon strong chemicals for their action.

A recent improvement in this line is manufactured by Parke, Davis & Co., Detroit, whose reputation as purveyors only of legitimate products for the medical, pharmaceutical and dental professions is sufficient guarantee that it, at least, presents none of the objectionable qualities that are too often found in preparations of this kind. This is Euthymol tooth-paste, which, as its name indicates, depends in a large measure for its value upon euthymol, a preparation that has long been employed by surgeons wherever perfect antisepsis was desired, and has moreover deservedly gained universal popularity because of its freedom from danger except to germ life.

To the mind of the writer this preparation warrants specific mention, inasmuch as it offers the ideal of a dentifrice in that it is at the same time a powerful antiseptic, reasonably detergent, modest in price, pleasant in odor, and exceptionally grateful to mouth and gums, while last but not least, its use affords a positive protection against foul breath and other conditions peculiar to the mouth that lead to retraction and softening of

the gums, staining of enamel, formation of tartar, and decay; it is likely to cause a likewise reasonably certain guarantee against a number of diseases which gain entrance to the human organism through germs in the mouth and digestive organs.—F. H. FUNSTON, in *Popular Science News*.

Leakage of Current in Cataphoresis.

There is one feature of this work to which attention has not been called, which is the danger of having a leakage of current and distributing the current in such a way as to cause a failure which might be attributed to the process, when the real cause was from something outside of the process itself. I refer to such a condition as the having of a metal filling on a tooth on which you are operating and not insulating that filling in such a way that the current cannot escape to it. You might open one surface of a tooth through which you are trying to obtund the dentine and have a filling already in the same tooth which would reach so deeply into the dentine of the tooth that when your current enters the newly opened cavity it will go through that filling and through other tubuli of the tooth and you will get almost no result. That would seem to be a caution unnecessary to be suggested, yet I have witnessed many apparent failures from just such causes.—W. B. AMES, *Western Journal*.

Method of Setting a Logan Crown.

First make a gold cup, into which the cervical end of the root snugly rests; a rectangular hole is then made in the cup to admit the Logan pin; the crown is then ground and filed to the cup in position on the root; the concavity at the cervical surface of the crown is then packed with pellets of cohesive foil until full; a suitable sized disc of pure thin gold is then punctured by the pin and forced snugly against the cervical surface. The crown thus treated is placed in position in the mouth and the gold disc attached by means of wax to the cup over the root, all of which are withdrawn together, invested and soldered.—H. W. SHRIVER, *Western Journal*.

BRIEFS.

Root Filling Material.—Use gutta-percha points and gold wire for filling root-canals.—S. S. Noble, *Western Journal*.

Enamel Cleaving.—The angle of enamel margins should be cut with a sharp chisel, when this is not possible, a sharp finishing bur.

Useful Articulator.—An old broken pair of beaked forceps makes a good articulator for crown and bridge work.—*W. H. Bailey, Dental Digest.*

Hypoplasia.—Dr. Sidney Stokes suggests that the term Hypoplasia should be adopted for enamel defects instead of the misleading name of Erosion.—*Record.*

Brush the Gums.—Many of us fail to impress upon our patients that the gums need brushing as well as the teeth. If the patient will do that properly it matters little whether he uses Borolyptol or water.—*C. S. Stockton, Items.*

Obscure Growths in the oral cavity, where the usual local irritation is absent, should be treated as syphilitic until it is proven that they are not.—*Western Journal.*

16 to 1.—Generally speaking 1 gold filling is worth 16 “silver” (amalgam) fillings—but one *perfect* “silver” (amalgam) is worth 1600 bad gold fillings.—*Items.*

Treatment of Hysterics.—One-tenth grain of apomorphine, given hypodermically, will break up and thereafter prevent any attack of hysterics.—*Lancet-Clinic.*

A Monotonous Life is depressing in its influences and dangerous to the general health. Amusements act as a tonic to the important organs and glands of the body.—*Med. Brief.*

Respiratory Gymnastics.—It is of the greatest importance that persons of sedentary habits cultivate the habit of taking full and deep inspirations as an exercise whereby all portions of their lungs may be brought into exercise and their tissue strengthened.—*E. Otis, Boston Med. Journal.*

The Hemostatic Action of Gelatin has been pointed out by M. P. Carnat as mentioned in the *Gazette Hebdomadaire*. The arrest of hemorrhage may be assured by the use of about a 5 or 10% solution of gelatin in water.

Frankel's Method of Narcosis.—Before administering the chloroform, he injects 1 c.cm. of a solution of morph. muriat. 0.15; atropin sulph. 0.015; chloral hydrat. 0.25. He has never had a fatal case nor severe asphyxia in twenty-two years.—*Med. Jour.*

Root Canal Points.For convenience in use, cheapness, and as a

time saver, I find the wood pulp-canal points superior to anything else. After the canal has been pumped full of chloro-percha, twist off the wood point in canal.—*W. H. Bailey, Digest.*

Silico-Fluorid of Mercury.—This salt has been recommended as being twice as energetic as corrosive sublimate as an antiseptic. It is far less poisonous than the latter salt, hence it deserves attention. It is used in aqueous solution 1 to 1,000.—*Pharm. Era.*

Drooling not due to Dentition.—Dr. Silvera says healthy infants never dribble or drool. This condition is due either to disorders of the digestive apparatus or to obstruction of nasal respiration, but is altogether unconnected with dentition.—*La Sperimentale.*

Loretin.—I have used loretin in a saturated solution with water in pyorrhea pockets a few times. It certainly arrests pus formation, does not taste badly, has no particular odor, but is quite yellow, and like pyok-tanin does not stain permanently.—*Dental Review.*

No Tubuli in Dentine.—Dr. R. R. Andrews said, N. J. Society, that there is no such thing as tubuli in dentine. What constitutes the tube is a part of the matrix which has not been filled by calcification; these are canals, and they contain vital fibers.—*Items.*

To Cleanse Burs.—Remove debris with a hand-brush of fine wire bristles in conjunction with an antiseptic. A wheel-brush used upon the butt of the engine arm strews the offensive matter all about the operating chair and is a very objectionable practice.—*Western Journal.*

Open and Fill.—The pulps of teeth die under labial fillings quite often, especially in bicuspid. These teeth do not change color perceptibly, but the safest plan of dealing with them is to open them up from the cutting edges, disinfect and fill the roots.—*Dental Review.*

Keep Posted.—Good results in our profession come from study, experience and skill, and these can only be obtained by a large expenditure of time and money. When thus equipped the people are not slow to recognize ability and to assign one to his proper position in society.—*W. H. Chilson, Review.*

To Prevent Rust.—A very small amount of alkali is sufficient to keep metal from rusting, so that if steel, iron, nickel or copper instruments are dipped in five grammes alcohol containing one or two grammes of either borate, carbonate, bicarbonate or benzoate of soda, they will not tarnish.—*Lancet-Clinic.*

Extract Deciduous Teeth with the Fingers.—In removing temporary teeth, I have fallen into the habit of operating chiefly with

my fingers, or by an incidental application of a probe or excavator, and very seldom, indeed, use a forceps, rather waiting until such time as they are not a necessity.—*N. Pearson, Dominion Journal.*

Formula for root-canal filling, tooth-lining and pulp-capping :

| | | | |
|---|--------------------|-----------|---------------------------------|
| R | Celluloid shavings | - - - - - | 1 oz bottle $\frac{1}{4}$ full. |
| | Ether | - - - - - | 2 drachms. |
| | Alcohol | - - - - - | 1 drachm. |

Add a few drops of ethereal oil.—*Max. Sichel, Pac. Stom. Gazette.*

Incompatibilities.—Formalin is incompatible with ammonia and the alkaline bisulphites, reduces alkaline metallic solutions and gelatin becomes insoluble through its action. Iodophenin is decomposed by water, liberating iodine. As it readily parts with its iodine, it should not be mixed with any body that has a strong affinity for that metalloid.—*Bulletin of Pharmacy.*

Preparation of Pure Hydrogen Dioxide.—A neutral or acid solution of hydrogen dioxide may be evaporated down, if quite pure, to a strength of 50 per cent. If this be further evaporated down in vacuo at gradually elevated temperature a nearly pure hydrogen dioxide comes over at about 84 to 85 degrees C. The process has been patented in Germany.—*Am. Druggist.*

A Test for a Cured Blind Abscess.—Press the point of your finger over the blind abscess, or where it was, or the one you suppose you have cured, and it becomes a livid color immediately, and if it stays so for a long time, you will find that you have not performed a cure. You cannot do that on any other part of the gum and produce the same result.—*B. Douglas, Dental Review.*

Join a Dental Society.—It is said of the twenty-five thousand dental practitioners in the United States, that only about five thousand belong to the dental societies, which shows an alarming indifference to professional interests that is difficult of explanation. That the greatest benefits are derived from society efforts goes without saying, and this alone should be sufficient inducement to any dentist to join the good work.—*W. H. Chilson, Review.*

Dental Societies.—Organizations of this kind are of great benefit to the young men of the profession, because they bring them into touch with more experienced minds in discussion, and tend to lead them upward and onward. No young man can truthfully say that associations are of no benefit to him. He who stands on these grounds, and remains outside of the organization is injuring himself more than he realizes.—*C. A. Southwell, Review.*

Mechanical Treatment.—I have found in my experience that those men who devote their time and energies to the mechanical preparation of cavities, to the condensation of gold, to the obliteration or removal of decayed matter in the pulp-chambers and pulp-canals of teeth, who mechanically fill them, are meeting with far greater success than those who trust to chemicals to do the work for them.—*C. L. Hungerford, Western Journal.*

Electrozone.—Electrozone or meditrina, is one of the very best agents for destroying offensive odors so commonly encountered upon opening teeth with abscesses. Indeed, there is no remedy in the entire materia medica that is any better. In cases of sluggish, chronic abscess, if injected through the fistule this agent seems to revivify the dormant vital forces, and to impart new tone and resolution to the tissues throughout the entire tract.—*A. H. Peck, Dental Review.*

Method of Opening Pyrozone Tubes.—I first place the tube in cold water and leave it there until the label will slip off; then carefully dry it and place it in a strong, clean, dry bottle (I keep for this purpose a citrate of magnesia bottle); then carefully close the same and shake until the tube breaks, when the solution can be poured off, leaving the broken-tube glass in the bottle. Great care should always be used in removing the covering from the tube, as it is liable to explode in the hands.—*J. W. Drullard, Stom. Gazette.*

Nasal Herpes Secondary to Toothache.—George Carpenter calls attention to a fact frequently observed by him, that herpes facialis may be due to irritation of the trifacial nerve reflexed from some dental affection. He suggests that facial herpes in the young should not be disposed of in an off-hand way as only a "cold," for children suffering from toothache do not always complain of the teeth. Facial herpes, therefore, should be looked upon as possibly due to dental worry, and its cause at least be sought within the mouth.—*Pediatrics.*

Cataphoric Medication.—With a zinc electrode or some other metal which is affected by the current and the salts of that metal thrown out by electrolysis, there is a possibility of those salts being conducted into the tissues and being used in very salutary ways in a large number of cases, particularly in the treatment of pyorrhea and the various forms of alveolaris. I can introduce an electrode of zinc into a pyorrhea pocket and get astonishing results from the salts of zinc, and I say the application is almost unlimited.—*W. B. Ames, Western Dental Journal.*

Influence of Sugar on the Energy of the Muscles.—Schumburg states that he has been experimenting with Mosso's ergograph to deter-

mine whether sugar increased the muscular power as some assert, or whether the increase in energy observed is due to psychic influences. He found that the sugar produced no perceptible effect on fresh, unfatigued muscles, but that muscles fatigued from previous severe exertion were strengthened to a noticeable degree. This effect was attained whether the muscles were strong or weak.—*Deutsch. Med. Woch.*

Dieting in Dyspepsia.—Dr. Balfour on his work on "The Senile Heart," gives the following rules in dieting, which are applicable in many cases of dyspepsia, as well as in those suffering from weak heart:

- (1) There must never be less than five hours between each meal.
- (2) No solid food is ever to be taken between meals.
- (3) All those with weak hearts should have their principal meal in the middle of the day.
- (4) All those with weak hearts should have their meals as dry as possible.—*Canadian Practitioner.*

An Application for Inflammatory Toothache.—Dr. S. Wotjoff, *Wiener klinische Rundschau*, recommends this mixture for toothache depending on inflammation of the dental pulp:

| | | | | | | |
|---|-----------------------|--------|---|---|---|-----------|
| R | Cocaine hydrochloride | - | - | - | - | 1 part; |
| | Camphor, | } each | - | - | - | 50 parts. |
| | Chloral hydrate, | | | | | |

M. Rub enough water with the mixture to make a clear solution, rinse the mouth with it, and insert into the cavity of the tooth a bit of cotton wet with the solution, to be retained for twenty-four hours.

Cut out the Fissures.—I have made it a practice for years, to always cut out a fissure if it comes in contact with a proximal cavity. If the bicuspid or molar is decayed on the proximal surface, and this cavity extends into the fissure of the tooth or sulcus, no matter how sound that may appear, I take a burr or drill and cut it out and fill it the entire length of the fissure in all its details or bifurcations; because where the fissure makes a large depression we bring the filling in there and we cannot finish or fill that corner right where that fissure comes down, satisfactorily, and make it water tight, or prevent recurrence of decay.—*B. C. Maercklin, Review.*

Improved Method of Narcosis.—Gräfe has found that the sensitiveness of the nasal membrane is of far more importance in terminating narcosis than is generally supposed, owing to its reflex action on the vagus region. If the nose can be kept closed, the narcosis proceeds far more readily, and lasts much longer, with less of the anesthetic required. He has therefore invented a light spring pad with which he stops the nostrils before the operation, and does not remove it until the patient is

completely aroused. It has rendered surprising service in the narcosis of persons with pronounced heart troubles, with the minimum of after effects.—*Dbl. f. Chir.*

Root Extraction Without Laceration.—Dr. T. M. Hunter, of Fayetteville, N. C., has devised a novel and very ingenious method by which difficult roots, buried up in the jaw, may be removed without laceration. He has a set of old-style How screw post crowning instruments. A hole is drilled in the root, along the canal if possible; then a thread cut with a tap, and a long nickel screw turned in slightly. With a pair of pliers this screw may be firmly grasped and with a slight lateral motion the root is loosened and brought away. Hereafter it should be considered malpractice to destroy the alveolus in extracting this class of roots.—*Items of Interest.*

New Publications.

THE STUDENT'S MEDICAL DICTIONARY, by Geo. M. Gould, A.M., M.D. Tenth edition, rewritten and enlarged. Philadelphia: P. Blakiston, Son & Co., Pub., 1896. Cloth, \$3.25.

The volume is an entire new one, the old plates having been destroyed. This edition, containing over seven hundred pages, includes all the words and phrases generally used in medicine and dentistry, with their proper pronunciation and definitions. It contains, also, elaborate tables of bacilli, micrococci, lucomains, ptomains, etc., tables of the arteries, ganglia, muscles, and nerves; of weights and measures, analyses of waters of the mineral springs throughout the United States, etc.

While other editions of Gould's dictionary have been well received, we predict an enormous sale of this new volume as it by far surpasses any of the previous editions.

The vocabulary is very complete and at the same time arranged in as concise a form as possible. One can almost invariably find the definition under the word he looks for without being referred from one place to another as in most dictionaries, and the pronunciation is a most valuable feature that is ignored in most of the other works. We consider it the best student's dictionary published and recommend it to the general practitioner as well.

DENTAL CHEMISTRY AND METALLURGY. Fourth edition, revised and enlarged. By Clifford Mitchell, A.M., M.D. One of the Dental College series of Text-Books. Chicago: The W. T. Keener Co., Pub., 1896, pp. 586. Price, cloth \$3.00.

We notice that much valuable material has been added to this new edition, increasing the size of the book by fully one hundred pages.

Dental Chemistry is one of the most important studies for the dentist and this is the best work, on the subject, published.

The author has kept it abreast of the times by continually adding new material of special interest. A hundred pages of practical matter have been added and this work in experimental chemistry has been followed by an outline of chemical analysis, the reactions of the more usual metals being considered at much greater length than in previous editions. Some physiological chemistry has been incorporated, that of digestion being quite extended. New material regarding the germ theory, ptomaines, leucomaines, and toxins has also been added. It is a most valuable book and every dentist and student of dentistry should own a copy.

ETIDORHPA; By Prof. John Uri Lloyd, Cincinnati: The Robert Clarke Co., 31 to 39 E. Fourth st., Pub., pp. 362. Price, Cloth, \$2.00.

It is seldom one sees a scientific treatise prepared in the form of a fascinating story, but here we certainly have one. Its author, Prof. Lloyd, is one of the best known American chemists, a scientist and scholar. He is an earnest student of nature and has delved into the depths of occult science. It would be impossible to give the readers an adequate idea of the contents of the book for it is unlike any other published.

It is a strange story of a journey through the earth. Introduces physics, botany, geology, chemistry, astronomy, philosophy, mythology, religion, occult science, etc., in a remarkable way.

It rebukes agnosticism, scolds fanatical scientists, denounces the idea of existence of an ether, which scientists claim is essential for the transmission of light, heat, etc., and declares there is no need for it. The drunkard's life is depicted in a wonderful manner, the description being equal, so say scientists, to any word picture in the English language. While it is a romantic and fas-

inating story from beginning to end, yet it teaches many scientific truths that will bear careful study. It is certainly a remarkable book and will have to be read to be fully appreciated.

The engravings prepared especially for the work, are certainly unique in themselves and add interest to the book.

The typography and binding are excellent and reflect much credit on the publishers.

NOTES ON THE HISTORY OF ANESTHESIA; The Well's Memorial Celebration at Hartford, 1894; Early Record of Dentists in Connecticut. By James McManus, D.D.S., Oct., 1896.

This book of 114 pages, contains the history of anesthesia, written by Dr. McManus, by request of the Connecticut State Dental Society, and read at the union meeting in May, 1893; Also an account of the Wells memorial celebration, held in Hartford, May 16, 1896, a list of contributors to the Wells memorial tablet, a photo-engraving of the tablet, and an early record of dentists in Connecticut. It is a valuable book for reference and Dr. McManus deserves thanks from the profession for preparing it. The edition is limited to two hundred copies.

THE BUR. A journal of 36 pages and published quarterly. Its editor is C. N. Johnson, L.D.S., D.D.S., (former editor *Dental Review*); associate editors, Drs. W. H. Fox, A. E. Morey and W. T. Reeves. The publication is the official organ of the alumni association, Chicago College of Dental Surgery. In its pages appear practical and miscellaneous matter of special interest to the alumni and under-graduates. In the Oct. issue Dr. C. S. Case presents a valuable article on "Simple Methods in Cleft Palate Work."

The editorials are timely, instructive, and entertaining.

We welcome this new visitor and wish its promoters success.

BOOKS RECEIVED.

The American Text-Book of Prosthetic Dentistry in contributions by eminent authorities. Edited by Chas. J. Essig, M.D., D.D.S. Published by Lea Brothers & Co. Price \$6.00.

A Text Book of Practical Metallurgy by J. D. Hodgen, D.D.S., San Francisco. Published by the author.

Ohio State Dental Society.

Do not fail to attend the meeting of this society at Columbus, Dec. 1, 2, 3, 1896. An extra good program will be presented, some of the subjects being as follows:

Dental Operations during Pregnancy.—Dr. H. J. Custer.

Cataphoresis.—Dr. L. E. Custer.

The Use of Gold on Tin in Combination as a Filling Material.—Dr. W. B. Conner.

Teeth Extracted without Pain.—Dr. W. I. Jones.

Bleaching Teeth by Cataphoresis.—Dr. Henry Barnes.

Some Reasons why the Cataphoric Method is not more successful.—Dr. Wm. H. Hersh.

Disease of the Antrum and its Treatment.—Dr. J. F. Stephan.

The above are only a part of the papers that will be presented, but all whose titles have been received up to the time of our going to press.

The subjects of Cataphoresis and Incidents of Office Practice will receive special attention.

Arrangements have been made for a visit to the Ohio State University on the evening of Wednesday, Dec. 2. An address of welcome will be delivered by the president, Dr. James H. Canfield, in the new University Opera House, after which Prof. B. F. Thomas, who stands very high in the electrical world, will demonstrate the Crookes tube and fluoroscope, illustrating the X rays as applied to dentistry. If the sky be clear, Prof. H. C. Lord will exhibit the McMillan Observatory with its large telescope and we can take a "peep."

Everything will be done to make this visit useful and pleasant.

Ohio State Board of Dental Examiners.

THE State Board of Dental Examiners will hold the next regular examination at the Chittenden Hotel, Columbus, Ohio, at 9 o'clock on Tuesday, November 24th. The Secretary, Dr. F. H. Lyder, Akron, Ohio, will answer all communications in regard to the examination.

THE OHIO DENTAL JOURNAL.

VOL. XVI.

DECEMBER, 1896.

No. 12.

CONTRIBUTIONS.

Working of Steel.

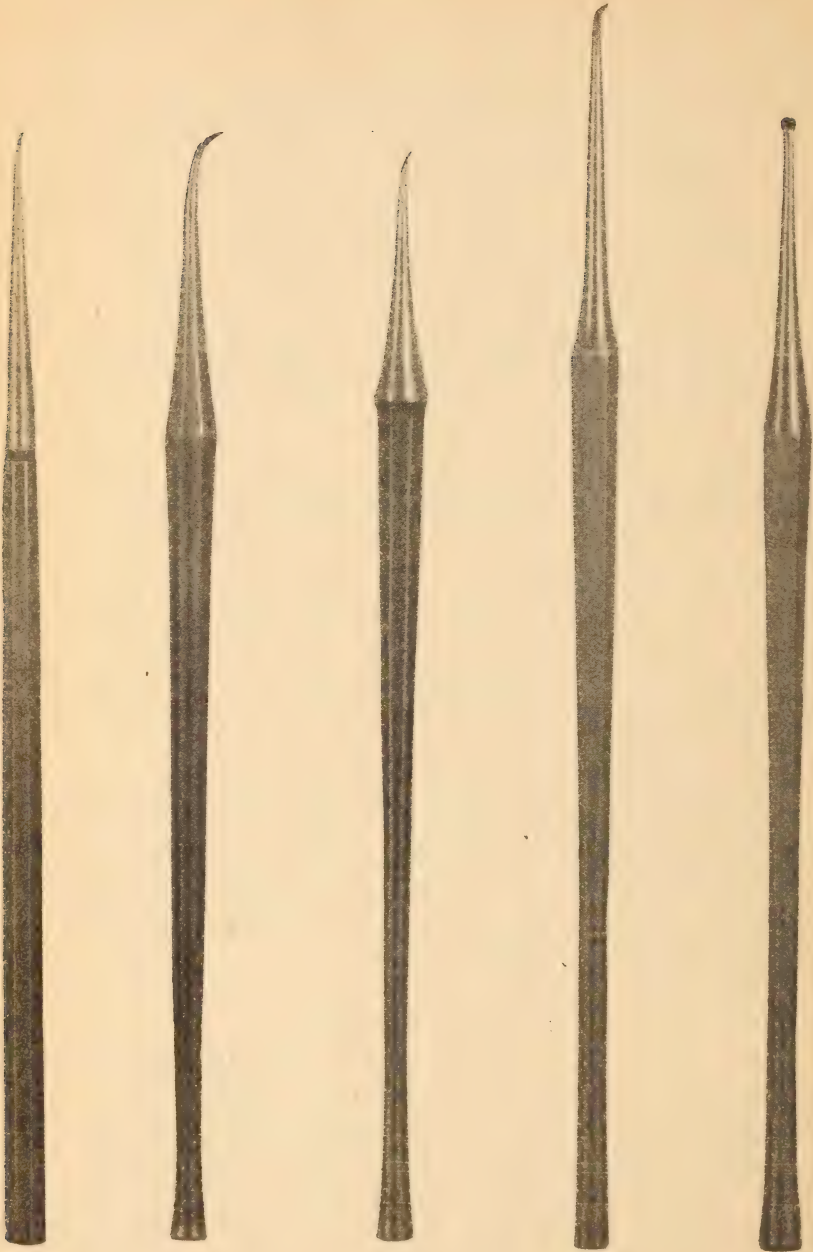
BY C. R. BUTLER, M.D., D.D.S., CLEVELAND, O.

SOME lectures on the above subject were delivered to the students of the Dental Department of the Western Reserve University Medical School in 1892-3, and having been urged to write the subject up for publication, I begin with a brief history of, or evolution of the model shaft and shank instruments from the plain line, especially mallet pluggers.

Previous to 1857-8 very little was known about the cohesive quality or property of gold for filling teeth.

The first advance from the smooth point and hand-force, was the fracture surface, then the single cut or pig foot point. Next the multiple, which was done by rubbing the point crosswise on a bastard-cut file (not a bad way to secure fine serrations.) You will observe that progress was being made by individual operators here and there, but there was no uniformity in modes and means.

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1a

2

3

1b

2b

Good patterns and forms were needed, and Dr. S. S. White, who was ever on the alert to meet the demands of the dentist, sought for the best things in the way of models, among the skilled operators who had been obliged to rely on their own ability to make instruments for themselves, in the way of cutting instruments as well as pluggers.

For years there was a lack of reliable tool steel—also of skilled labor to make fine serrated pluggers, which were being demanded more and more.

Dr. Corydon Palmer, a most skillful operator, was a pioneer in the working of steel and in producing a variety of instruments for his own use, and many operators have samples of his handiwork. To him is due the credit of giving the first modeled shaft and shank mallet pluggers to the profession.

In order to show the decided advance that was made about 1870 to 1873, some illustrations of instruments, that had been made and used by Dr. Palmer and the writer, are here given.

Mr. White wished to duplicate these for the market, but neither of us ever gave him simply *patterns*, but complete instruments that had been thoroughly tested for adaptation. Uniformity was the principal object sought; to secure this, the instruments must be useful and of fine quality, as well as attractive, all of which Mr. White was quick to see and adopt, regardless of expense in production.

See opposite page for illustrations.

No 1a—Old style straight line, shafts octagon, with round taper shank.

No. 2—Palmer—Octagon shaft, round shank.

No. 3—Palmer—Round shaft with octagon shank. These were the originals $5\frac{3}{4}$ inches long.

No. 1b—Butler's modification—Octagon shaft, round taper shank, $6\frac{1}{4}$ inches long.

No. 2b—The celebrated ovoid point, No. 16, in the Butler set, and is the original model from which the Nicklins, and others have been taken.

There was no latheing employed in the production of these forms, it was all hand work. A skillful mechanic may duplicate a model, but a different order of skill is required to create and give needed adaptation to an instrument.

(To be continued.)

A Precaution in Cataphoresis.

BY L. E. CUSTER, D.D.S., DAYTON, O.

SOME time ago while producing cataphoresis with the Edison current, I could not account for a shock to the patient even while there was no current flowing through the shunt and presumably none through the patient. It was not until she was told to keep her hands from the arms of the chair that we were able to proceed. After the operation we investigated the cause and it was found to be due to a ground through the water flowing in the rubber tubing of the cuspidor.

The fountain spittoon is attached to the chair, and while the metal base does not touch the valve on the floor there is nevertheless a ground through the water flowing in the rubber tubing.

Water is not a very good conductor of electricity ordinarily, but when there is a column of it $\frac{3}{4}$ inch in diameter and but 5 feet long it is quite a good conductor—good enough to produce very undesirable effects in cataphoresis. During the application the current could flow through the resistance of only one lamp and from there through the patient to the cuspidor so that there was a flow of current which would not be registered on either the volt or ammeter. Now when the patient having the anode in the tooth touched the iron work under the chair arms she completed the circuit and received a shock.

Upon testing what voltage would be operative, it was found that almost 1 volt would be felt in this way. If the patient would keep the hand perfectly quiet the pain would gradually subside, but if she were to relax, or alter her grip there would be pain accordingly. With some patients it is their habit to tighten their grip upon the chair arm when pain is produced.

Now while there would be about one volt pressure through the water in the tubing, had the base of the chair been in contact with the valve on the floor we would have had between 40 and 60 volts, which we think would then and there break all connection between patient, chair and operator.

The current which would flow through the patient in the above instance would be a direct current and not a shunt current and the pain would be largely increased on that account also.

A General Consideration of the Adaptability of Filling Materials to Tooth Structure.

BY F. T. VAN WOERT, M.D.S., BROOKLYN, N. Y.

THE general consideration given to the adaptability of filling material to tooth structure, seems to be more from a theoretical, than a practical stand point; that is, if we are to be guided by what is written on the subject. From the very foundation of all science theory and practice have clashed, notwithstanding which one is as necessary to the success of the other, as proper nourishment is for the maintenance of life and health; so that I should not depreciate the efforts of theorists but rather regret the limited expression given to the more practical clinical experience of the careful operator. It is but a short time ago that a very extensive series of experiments made by the eminent Dr. Black, and recorded in the *Cosmos*, created an impression in the mind of many of our members, particularly the younger ones, that their efforts had been falsely directed, and an immediate reform should be organized; (namely a gold standard), which if they persist in, will surely defeat their ambition for success in professional life.

That hard and soft teeth are of the same chemical composition, we will not attempt to dispute. But that there are hard teeth, and that there are soft teeth, we cannot deny, and that hard teeth will stand more natural and mechanical interference with their structure, than the softer ones, is equally undeniable; hence Dr. Black's deduction that gold is the best preserver for all teeth, may be plausible in theory, but very unpracticable in application.

It is my purpose to review a personal experience of the last eighteen years, together with what I have gleaned from my contact and intercourse with many gentlemen of noted ability.

First.—The one object of the scientific and conscientious practitioner, is to preserve from the ravages of decay.

Second.—In so far as possible, to correct any malformation of the organ of the oral cavity.

But it is with the first difficulty that I shall deal, and this only, in so far as the materials at our command are adaptable to the structure with which they come in contact.

That it may be better understood I will consider first, the different materials separately, and their combination later.

Cements or the oxyphosphates, are probably the least to be relied upon as preservers of teeth, particularly when caries has encroached upon the approximal surfaces, or broken down the structure below the gum margin ; still there are many cases where it would be almost an impossibility to save teeth with any other material. For instance, where the waste has been so great that sufficient anchorage cannot be obtained, without sacrificing the strength of the remaining structure for the support of a material possessing none of their adhesive properties.

Realizing perfectly the care and careful watchfulness necessary when driven to the use of these materials, it is far better thus than that the teeth should be lost, or badly disfigured in an effort to substitute any other composition, or pure gold. So in my practice the oxyphosphates hold a very prominent place for other than the setting of crowns, bridges, linings, cappings, etc.

The prevailing mistake in the use of cements is in the method of mixing. If care is taken to incorporate the powder with the fluid in such quantities as to insure a perfectly smooth mass, and not stiff enough to loose its adhesive qualities, a very much more serviceable and lasting filling will be made. Another great mistake is, the continued working at the filling during the process of its setting. To obtain the best results it should be allowed to stand from ten to fifteen minutes ; at the end of which time, it should be shaped and polished as per gold, then coated with a thick varnish made of Canada balsam or collodian, understanding of course, that all precautions are taken in the beginning of the operation to protect the parts with the dam, etc., just as in the manipulation of gold. Under such conditions very satisfactory and profitable results will be obtained.

Gutta-percha has no superior as a tooth-saver where the structure is soft, and the cavities in obscure or inaccessible locations, as well in those cavities situated on the buccal surfaces at the gum margin, particularly the inferior anterior teeth. For the best method of introducing this material, I am indebted to Prof. Howard, of Buffalo, which is as follows: Prepare the cavity in the usual way, drying thoroughly with the hot air syringe, then varnish the inner surface with chloro-balsam and place the gutta-percha of small pellets, packing with instruments heated from

ten to fifteen degrees warmer than the pellets are when taken from the warming plate. (I find the best devise for warming gutta-percha, and not over-heating it, is to place it on a small plate or metal slab over boiling water, and the instruments with their points immersed in water, which gives about the required difference between the two.)

The filling as in the case of the cement should be allowed to stand from ten to fifteen minutes before polishing, which should be done very carefully so as not to cause the pulling away from the margins. If the direction of the force required is from the centre to the circumference, that is to say, if in using a disk it is made to revolve so that the surplus is carried from the centre of the filling surface to the cavity margin, such heat as is generated by the friction will consolidate the material at the point where it is most needed, namely : the cavity margin.

Chloroform should never be used for finishing ; it dissolves the gutta-percha and leaves a rough granular surface, principally of zinc oxide, which soon becomes so coated with the mouth secretions as to be a detriment to everything surrounding it, and filthy in the extreme. If allowed to get hard, trimmed carefully, polished with cuttle disks, and lastly burnished, results are obtained that would be impossible in any other way.

Gutta-percha is a most valuable filling for temporary teeth, even the inferior grades of base plate gutta-percha serving admirably to preserve and make comfortable many a child's teeth, until nature supplies them with the second or permanent ones.

AMALGAMS.

Of all the agents placed in our hands to relieve suffering humanity, there is none that I know of which is so thoroughly abused as this, but with all its abuse it remains a friend of the unskillful, as well as the skillful operator. It will tolerate any amount of maltreatment, and in return save more teeth with the least assistance, than any material at our command. It is unartistic and homely to those unacquainted with its virtues, but back of all are the good sterling qualities which will keep its memory alive for generations to come.

The day is not far distant when the scientific and skillful manipulator will erase every smirch from its character and place it where it belongs, hand in hand with gold.

I have seen amalgam fillings that were as much a work of art as any gold filling, and it was simply the color-line which divided them.

Do not understand me as being an amalgam fiend or crank, for I am far from it. To the contrary, the greater part of my operations are in gold, (for asthetic reasons only), but the other has its place, and the sooner we all learn to follow that old maxim, a place for everything, and everything in its place, the better we will serve the public and reach the goal of our ambition, fame and fortune.

How are we to get the best results for all concerned? Personally I find by giving just as careful attention to all the details in preparing for the introduction of amalgam, that you would for gold, and before placing it to protect the tubuli with a lining of some kind, at present we will say chloro-balsam, (later I will give others), next by properly mixing the filling material with the mercury. In this I succeed best by placing both in a small piece of rubber dam, draw the rubber tight around the mass and rub it briskly in the palm of the hand, which will make a smooth paste; then relieve it of the greater excess of mercury by squeezing between the thumb and first finger; wash with soap and warm water; finish by removing the balance of the excess mercury, and proceed to the filling, burnishing small pieces into place with burnishers of suitable size to touch all parts of the cavity. If there is a contour of any extent to restore, soft gold foil can be added with marked advantage. This is best accomplished by burnishing to place in single layers. In all cases these fillings should be carved and polished at a later sitting when they have become thoroughly hardened.

GOLD.

The perfect manipulation of this material requires a certain amount of dexterity that is only acquired by practice, and like swimming when once mastered, is never forgotten.

The extent to which artistic contours are restored, depend largely upon the natural ability of the operator. With gold it seems to be more than the mere salvation of a tooth or teeth; the par excellence of beauty is the pinnacle to which all aspire. There are some who pride themselves on the large amount of gold they are able to condense in one cavity, and loose sight of

the fact that the adaptability to the cavity walls, and with sufficient density of the surface to withstand attrition is what is required to make a serviceable and beautiful operation, and to my mind is far preferable; first, because it is less tax upon the strength of both the patient and operator; second, it is not as liable to fracture the walls when introduced, or later while performing its function, as a substitute of lost tooth structure.

As to the method of introducing, or the kind of gold used, I am obliged to omit, because, time and space does not permit of the proper explanation.

In conclusion of the above, and before touching upon the combination of the four materials named, I want to define my views as to the adaptability of each on tooth structure when used separately.

Cements of oxyphosphates in such teeth as are so wasted that sufficient anchorage cannot be obtained to support a filling which does not possess the adhesive qualities of the same.

Gutta-percha in obscure and inaccessible cavities, particularly teeth of very soft structure, or in buccal cavities at the gum margin of chalk-like teeth, and in temporary or deciduous teeth, amalgam in all the posterior teeth where the cavities are so large that good strong walls cannot be obtained without the devitalization of the pulp; and last, but not least, where the condition of the patient's pocketbook will not permit of extensive operations in gold.

Gold in all cases where the structure and cavity walls are of sufficient strength to permit of its introduction and maintenance without sacrifice to the parts with which it is attached. And as stated under amalgam, when the financial condition of the patient will permit.

COMBINATION OF FILLING MATERIAL.

Combining two or more of the materials named above has proven the most satisfactory of all methods to me in filling either hard or soft teeth. I am satisfied after years of careful observation that wherever it is possible, the inner structure or dentine should be protected from direct contact of any of the metal fillings. As well, I find that either gold or amalgam gives far more satisfaction when used in combination with the oxy-phosphates; and in many cases all three are decidedly advantageous when

combined to make one filling. Years ago Prof. Flagg, of Philadelphia, introduced a method of combining oxy-phosphate and amalgam while in a plastic state. After preparing the cavity he placed a small portion of the cement in the bottom of it, and soft amalgam in while it was a sticky mass, the result of which was a thin coating of cement between the wall of the cavity and the alloy, the excess of the cement being forced out at the margins during the burnishing, the margins being carefully gone over with a suitable bur, that the amalgam and enamel might come in direct contact, to prevent washing of cement at that point. This proved so satisfactory that I was led to the use of other combinations with equally good results; and to those who never have used a combination of filling material, the following may prove of great value in future practice:

OXY-PHOSPHATES AND GUTTAPERCHA.

In the bicuspid, usually, and sometimes the molars, where the cavities extend well below the gum line, particularly on the approximal surfaces, in teeth of soft or chalk-like structure, prepare the cavity in the usual way, coat the floor with chloro-balsam, and fill with guttapercha to about 1-16th of an inch above the gum line, the balance of the filling to be made with cement, and finishing as described before. This gives a filling possessing all the advantages of a complete cement filling, namely: strength for contour, and adhesion for anchorage without the disadvantage of waste at the margin, which is the defective point of all cement fillings.

GUTTAPERCHA, OXY-PHOSPHATES AND AMALGAM.

Being a thorough convert to the belief that cements when placed in too close proximity to the pulp will cause its death, and to prevent this I roll guttapercha in very thin sheets, cutting from it a piece of suitable size to cover the floor of the cavity, this I place on top of a coating of chloro-balsam, following with a cement and amalgam after Flagg's method, depending upon the heat of the cement to soften the guttapercha sufficient to cause perfect adaptation to the walls of the cavity. This combination is applicable to all cases, when there is sufficient strength of wall to support an amalgam filling: in the molars or bicuspid of soft structure, and where the financial condition of the patient will not permit of the use of gold.

OXY-PHOSPHATE AND GOLD.

This makes one of the most pleasing and lasting fillings that I know of when gold is used (in cavities above the gum line.)

In preparing for the introduction of this combination, the cavity should be shaped as for a cement or amalgam, deep under cuts for anchorages being unnecessary, the general difference between the opening to, and the body of the cavity in size, together with the adhesive properties of the cement, being all required to hold the filling.

If I am not mistaken, Prof. Flagg was the first to introduce this, as well as the method described above on amalgams, and is as follows: Cement in sufficient quantity to about half fill the cavity, is placed in position, and while plastic and sticky, gold pellets are pushed well into the mass, as close together as possible, then allow from ten to fifteen minutes for it to harden, after which clean the margins of any cement that may have been forced over them, and finish by malleting the balance of the gold. to make up the contour. If a tooth is filled out of the mouth in this way, and then broken open, you will find by removing the cement that the gold looks very like a heavy swedged shell with a number of headed pins on the under or inner surface. Such fillings are very advantageous in the teeth with thin walls, and of soft structure, much more so than if all gold were used.

AMALGAM AND GOLD.

Again, I acknowledge the advantage of Prof. Howard's methods, by giving the details of his operation in combining these materials in one filling, and in connection with this I want to give you an idea of how I use the dam, say with the first and second molars, when performing Prof. Howard's operation.

First, cut one hole large enough in the rubber to permit of its being stretched over the two teeth, next, with a curved needle, pass a piece of silk floss through both sides of the dam at the point where it can be used to draw the same together between the cavities and tie, dry as near as possible, then warm enough modelling compound to fill both cavities, and after coating carve from one of the teeth sufficient to form a matrix; now fill that portion of the cavity below the gum line with amalgam, building to about 1-32nd of an inch above it, and while yet soft add gold.

in soft pellets with a burnisher, until it ceases to show the absorption of mercury. Finish by condensing the balance with a mallet in the regular manner.

One point to be remembered before beginning the condensation of the gold as last stated, is to cut away the compound from the margins to the point where the burnishing ceased, that the adaptation may be made without the aid of a matrix.

The advantage of a filling of this kind over one made entirely of gold is that a perfect joint is made at a point with the amalgam, which in most cases would be impossible to accomplish with gold, for a number of reasons too plain for me to bore you with a description of them. As well, if the operation is properly performed, it is very difficult to distinguish such a combination from its neighbors of pure gold.

In conclusion, I believe electricism is the coming practice in dentistry. We should all endeavor to make the punishment fit the crime, and not be radicals in any one direction. Our sworn obligations to the public and our profession, is to preserve if possible in a healthy and useful condition those organs given by nature for the proper mastication of proper food stuffs, which is the nourishment for maintenance of life and health and not to sacrifice them for any fad or hobby, at the expense of the latter.

If this paper will provoke a free discussion on the truly practical points of the subject, I shall be glad to profit and learn therefrom, and feel more than repaid for my efforts to present these observations of my experience.

Empyema of the Antrum.

BY J. F. STEPHAN, D.D.S., CLEVELAND, O.

EMPYEMA of the antrum is of so great importance that a brief consideration of this affection may be of interest to all of us.

In this affection we have a chronic inflammatory condition of the mucous membrane lining the antrum and an accumulation of pus, serum and mucus in the cavity. Swelling of the face and fever, headache, earache, with more or less neuralgia of the affected side of the face may accompany the trouble in its incipient stage, but after a short period the pain and swelling as well as the

fever, give way to a peculiar uneasy sensation about the parts. However, when the nasal opening of the antrum becomes closed, the face shows more or less swelling and the bony walls being very thin easily give way to pressure.

In severe cases the eye protrudes from its socket and the nasal cavity becomes obstructed in consequence of the bulging of these walls. The peculiar characteristic feature of this swelling is the absence of fluctuation.

A purulent discharge from the nose or in the nasopharynx, which continues for any considerable length of time should make us suspicious of an empyema, especially if this discharge is unilateral.

The patient complains of a catarrhal condition of the affected side of the nose accompanied by a peculiar disagreeable odor which is not necessarily noticeable to others.

A bad taste in the mouth is an almost constant symptom as the purulent secretion flows into the pharynx, especially during sleep. It is claimed that while alveolar abscess is the most potent cause of empyema of the maxillary sinus, this cavity may become affected through constitutional disturbances such as scrofula, tuberculosis, anæmia, and chronic diseases of the liver and kidneys.

However, the antrum can be and often is infected by purulent discharges from an affected frontal sinus or the ethmoidal cells for in such cases the discharge passes through the infundibulum, and along a half tube which terminates in the nasal opening of the antrum. Along the lower border of this nasal opening we frequently find a fold of mucous membrane extending upward, forming a pocket into which the secretions from the frontal sinus pass filling the antrum before the discharge reaches the middle meatus of the nose.

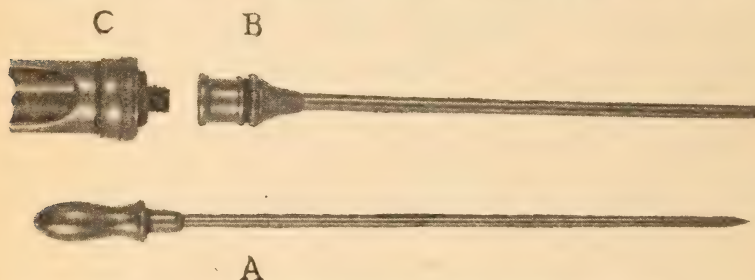
In diagnosing empyema we note particularly the catarrhal condition of the affected side of the nose, the peculiar disagreeable odor, the heavy feeling the patient experiences in that side of the face on rising in the morning, or any of the previously mentioned symptoms.

We proceed to examine the nose carefully and find an inflamed hypertrophied mucous membrane covered with more or less purulent secretion. If after this secretion is thoroughly and carefully removed, pus again appears, in a few minutes, we are reasonably

sure it comes from some cavity and not from the mucous membrane itself. A drop of pus usually appears on the inferior surface of the inferior turbinated bone toward its middle third, for the opening of the antrum and the mouth of the duct leading to the frontal sinus and ethmoidal cells are situated in the middle meatus of the nose just above the middle third of the inferior turbinated bone.

If the nose is again thoroughly cleansed of the pus, and the patient bends the head forward and downward, with the suspected side uppermost, the natural opening of the antrum is lowered, while its floor is raised and at the same time the opening of the frontal sinus is raised, and if the head is shaken a little, any fluid in the antrum will tend to run out into the nose. If we examine the nose immediately and again find pus on the inferior turbinated bone we are justified in making an opening into the antrum.

When we are not positive that we shall find pus in the cavity but feel reasonably sure that this is the seat of trouble, we are thoroughly justified in making an exploratory puncture with a



small trocar (Fig. A) either through the nasal wall or through the mouth just above the roots of the second bicuspid or first molar teeth, thereby establishing a perfect diagnosis.

To make the experimental puncture through the nasal wall, we pass the trocar back to the junction of the middle and anterior thirds of the inferior turbinated bone and directly below that bone. If the outer end is now pressed well over against the septum and at the same time depressed, and the point of the trocar is brought well up under the inferior turbinated bone and against the maxillary bone, which is very thin at this point, a slight force exerted outward, upward and backward carries the trocar into the antrum.

This trocar consists of a tube B within which a puncturing

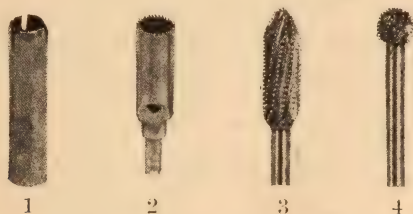
needle or bar A is inserted. The puncture being made the needle A is removed while the tube B remains in the opening. The cavity is now washed, preferably with a normal salt solution by means of a syringe (C) attached to the trocar B and the solution allowed to pass out through the nose into a clean basin.

If the solution contains pus our diagnosis of empyema has been established.

There is little or no objection to making this experimental puncture for you have a positive diagnosis, and if you do not find pus in the antrum the opening heals immediately and you get no bad results.

Since the majority of antral troubles are caused by diseased teeth, the principal attention should be directed to a careful examination of every tooth in the upper jaw on the affected side. As a usual thing the offending member is extracted and an opening made through the socket into the antral cavity. While I am governed wholly by the conditions presented in each individual case, I prefer greatly to make the opening into the antrum through the mouth.

The object in operating through the mouth is to make the opening at the most dependent portion of the floor of the sinus thus giving the best possible drainage. Where it is not absolutely necessary to sacrifice a tooth it is preferable to operate buccally just above the second bicuspid or first molar teeth, selecting the base of the ridge of the malar process of the maxillary bone as indicating the most dependent portion of the floor of the maxillary sinus.



I make these openings with a trephine, Fig. 2, or bur, Figs. 3 and 4, about .193 inches in diameter. To establish a more permanent drainage and a convenient passage through which to wash the cavity, a platinum tube attached to a plate, or to the adjoining teeth or to a plate of metal which fits the gum tissue surrounding it, is inserted into the opening and allowed to extend just a trifle above the floor of the antrum.

This tube is drawn in slightly at its extreme end and is slit down its sides a short distance, forming three lips, Fig. 1, thereby insuring thorough drainage of the floor should it extend too far into the antral cavity.

This tube is closed by means of a rubber cork to prevent the passage of foreign substances into the cavity and to restore the normal condition within as nearly as possible.

The burs and trephines are constructed so that when an opening is made the tube will fit into place. The cavity is thoroughly cleansed by means of a syringe once, sometimes twice, a day with sterilized water, slightly warm, followed by peroxide of hydrogen diluted about one in four, then with a mild solution of boracic acid, not to exceed three grains to the ounce. After washing, air is passed through to dry the cavity as much as possible.

I use a four ounce syringe to which I attach about a foot and a half of drainage tubing, which just fits into the platinum tube. Then by having the patient lean well forward the antrum can be thoroughly cleansed and the solutions will pass out of the nose without seriously inconveniencing him.

The progress made toward effecting a cure depends largely upon the general constitutional condition of the patient.

If we find necrotic bone in operating upon these cases it must be removed before we can successfully treat the mucous membrane.

If the frontal and accessory sinuses are the source of trouble they must first be cured and then we will find the antral trouble will yield readily to treatment. After the mucous membrane has reached a normal condition the opening may be allowed to close. However, I prefer to close it surgically if possible.

Method of Repairing the Horton Bib.

BY BURT ABELL, ALBION, MICH.

WHEN the Horton bib gets to leaking, or the lining of rubber gets cracked or thin, turn it inside out, and coat with a paste of black rubber dissolved in chloroform. When dry, dust French chalk over the surface and rub it in well to prevent the sides from sticking together. If the paste has been distributed evenly it will be almost as good as a new bib.

Improved Proximal Enamel Cutters.

BY C. R. BUTLER, M.D., D.D.S., CLEVELAND, O.

THESE instruments may also be used in trimming fillings. They are right and left in the cutting edge, pull and push when properly ground.

They were put on the market by the S. S. White Co.

The improvement here suggested is to have the *flat* of the blade concaved, to facilitate sharpening and give better impingement.



Operators that have them can grind the concavity with a small corundum stone in the dental engine. First grind a groove in the center of the blade, then apply the pressure forward, bringing the concave to the edge of the blade, then reverse the engine and grind up to an edge. It will require a little care to accomplish this, but you will be repaid by having a cutting blade far superior to the old style.

The Destiny of the Third Molar.*

BY O. L. HERTIG, D.D.S., PITTSBURGH, PA.

WHAT will be the future of the third molar? Is it a fixture? Will it continue to erupt in ages to come, between the ages of 18 and 40, or will it, like the prehistoric hair-covered skins and prehistoric caudal appendages that our Simian forefathers are supposed to have worn, be cast aside as useless as human development takes another degree?

Naturalists and evolutionists have written at length as to man's future. Some having pictured him as a beast almost in the long long ago, bring him before the mind's eye in a future condition of mental development and power, associated with a physical helplessness, impossible for common sense to realize. The

* Read at Odontological Society of Western Penn., New Castle, Sept., 1896.

theory advanced by some, that the coming man will have neither hair nor teeth, but will be possessed of a brain power beyond our conception, which will more than compensate him for the loss of his bodily vigor, is to me absurd to a high degree.

With increased mental power comes increased appreciation of the value of health and strength of every organ and limb, add the combination of the perfect intellect with the perfect body, forms our ideal, the perfect man, and if the laws of proper living are observed, the coming man.

What has this to do with the subject? you ask. Just this. If in course of ages the third molar is eradicated by some process of nature, it goes to show that a step has been taken toward the evolution of the thing with gallon of brains and no teeth, hair, or muscle.

Many dental writers have discoursed long and learnedly on this subject, but like the discussion of the various religious theories, much has been said and little established.

Now, I am neither scientist nor soothsayer, and do not propose to make any far-fetched predictions as to man's destiny, etc., but I do have an idea or two concerning the "*dens sapientiae*" and its utility.

We all know the important office performed by the deciduous teeth, how, while the infant jaw is growing they serve the purpose of mastication, and how in course of time they yield to and are replaced by the oncoming permanent ones.

We all know the mission of the six year molars, how the four of them in place serve to preserve the proper relation of the jaws while the other teeth are being erupted.

But I have never heard any satisfactory explanation as to why the wisdom teeth put in their appearance from 24 to twelve years after an abundant supply of the organs of mastication has already been provided.

Not a dentist in the land will disagree with me when I say that 28 teeth are enough for any man, be he Zulu or professor; that is, if the aforesaid 28 can be kept in a good condition, which in a great many cases is impossible.

Here is where the utility of the third molar manifests itself; here is where its late arrival shows as much forethought on the part of the Supreme Designer as does the early advent of the six year molar. Not because the lapse of ten or twelve years allows the jaws to develop so as to receive it. No!

Had he willed it so, the Ordainer of all could have caused the same development to have taken place in the youth of 14, for the reception of the third as did take place in the child for the reception of the first and second molars.

I think a different plan was intended.

When man was first placed on this earth, his maker fully realized the many conditions, the various changes, the development, the civilization, etc., that he would in course of time undergo; He was aware that the teeth of man in some future age would be more susceptible to decay than when he lived a simple out-door life.

I regard the third molars, coming as they do years after a full complement of teeth has been supplied, as auxiliaries, reinforcements in fact to the original set for the accidental loss of one or more of them. We see this illustrated time and again. We cannot fail to notice the important duty performed by these organs.

I have observed many cases where the timely arrival of the wisdom tooth has filled the space and supplied the loss of a valuable grinder. In this way it fulfills a more important mission than if it came merely as an addition to an unbroken arch.

A perfect mouth, equipped with 28 teeth, has no need of the *dens sapientiae*, as I have intimated before, therefore if there should be a crowded condition of affairs, the dentist, fulfilling his part of the same divine providence that instituted the organs of mastication, can relieve the trouble.

I believe with the scientist, that there has been a tendency, during the last few centuries, of the human jaw to become smaller. I am also a firm believer in the effects of use and disuse; of environment and of necessity; but this does not prevent me from believing that the wisdom tooth is an essential part of man's anatomy, and that it will always be present to perform its allotted part, whether there is room for it or not.

I know, of course, that the lack of exercise causes a vitiated condition of affairs in the mouth, invites decay and causes loss of the dental organs. I know also that the third molar very very often gives timely aid to the masticatory apparatus by its arrival, and I do know that in the presence of necessity there is no probability of the eradication of the very agent that brings relief. I regard the third molar as a fixture. Other reasons than those just mentioned confirm my belief.

Soft foods, pies, cakes, pastries and confections of all kinds have been having their day. Unphysiological cooking has been practiced far and wide, all over the land. The crowing dimpled infant has been fed prepared foods to eke out the scanty milk supply of its mother, who at meal time paid more attention to the dessert than to the substantial part of the repast.

Our mills, casting to the eager fowl and appreciative swine the nutritious part of the grain, have been presenting to the public, for its consumption, flour white as chalk and slightly more nourishing.

The duty of the intelligent dentist is manifest. Casting aside all prejudice, driving to the quiet shades of oblivion the memory of his mother's short-cake, her billowy loaves of snow-white bread and the fast dissolving pound-cake and pie, he must take a firm and decided stand for simple and hygienic diet; and his views should be all the more pronounced when the unerasable memories of throbbing, gnawing, twinging molars present themselves, and the ever ready tongue seeks the useless spaces in mute protest against indulgence in articles similar to those aforementioned.

Gentlemen, the dentist is a tremendous factor in the proper education of people at large, as to the effects of different articles of food upon the oral fluids. A change is slowly coming; people are beginning to see for themselves. The athletic rage, as some call it, which is occupying the thoughts of millions of our world's young people, is but a suggestion of what is to come. Simplicity of life and physical strength go hand in hand, and this desire of our boys and girls to be hearty and strong, will eventually work such a revolution in the habits, diet and affairs ordinary of our people, that the effect will be seen not only in the bright eye, the muscular frame and the elastic footstep, but in the sweet, clean, healthy condition of the teeth and oral secretions.

I really and truly believe that a better state of affairs is coming. I believe that man will continue to improve both mentally and physically. Our games, our sports, our educational institutions and moreover the tendency of age to the combination of muscular with mental development, give strength to my belief.

Then, in future ages, as the perfect man, with his brain in healthful harmony with his body, pursues the plain daily routine of his life, the future dentist will find the jaws of his patients

amply large for their 32 teeth, and his duties will be simple in proportion as the life of the world's people is simple. So the third molar having room, will erupt in proper season and will rest at ease in its socket. Thus, having acted in its kindly role of auxiliary and reinforcement, it will continue to discharge its duty as designed by the wise Creator.

Treatment of the Dental Pulp.*

BY W. A. SIDDALL, D.D.S., CLEVELAND, O.

THE number of pulpless teeth that the dentist is called upon to treat ought to make him stop and consider very seriously the subject of the dental pulp and its treatment.

As dentists grow older in practice and experience they sometimes forget that those younger than themselves are forced to learn by experience alone what might have been learned from a freer discussion of some of the more important practical questions.

Not long since the writer had a case in practice, in which the six anterior superior teeth had been filled with gold by an excellent operator, and the fillings were all standing beautifully, but in five of the six teeth the pulps had died and three of the teeth were badly abscessed. When we see such a case as that, it should cause us to stop and consider whether we are doing all that we can to preserve the life of the pulp.

Let us briefly review the reasons why it is wise to save the pulp, if possible.

1st. For beauty. Especially is this the case in the anterior superior teeth, for in spite of your efforts at bleaching and treating, there is an opacity to any pulpless tooth, which mars the beauty.

2nd. To prevent a greater liability to an incurable disease.

3rd. To promote longevity of the tooth. We know that a pulpless tooth is more brittle than a live tooth and while perhaps not more liable to decay, it is much more liable to suffer from fracture.

These are some of the reasons which we think are sufficient to warrant the greatest care in the preservation of the pulp.

* Paper read at Northern Ohio Dental Society, at Cleveland, June, 1896.

Why is it that we have so many patients come to us with swollen faces and aching teeth, due to the death of a pulp? Well, you say that "the patient came to me with a pulp nearly or quite exposed and I did the best I could with it, but it died in spite of me." I grant that there are many such cases, but I am afraid that they are not the only ones in which the pulp dies. A great many times the trouble is the direct result of careless and unskilful work. Sometimes I am startled to see the direction of a pit or the depth of a groove in a cavity that has been previously filled. There is nothing in dentistry which requires more skill and thought and good judgment than to properly place anchorage for a filling without danger to the pulp—to be able to tell where the pulp is in a tooth and to so place anchorage that the filling will not be injurious to the life of the pulp, requires the greatest judgment.

There are so many things to be considered—the age of the patient, the density of the tooth, any peculiar shape of the tooth or cavity. We must look out for any unusual location of the pulp or unusual length of the horns of the pulp.

I believe that there are a large number of pulps sacrificed unnecessarily by a lack of care and judgment in the preparation of cavities.

It is not so much from a lack of knowledge on the part of the dentist, for certainly enough has been said about lining cavities and good methods enough have been proposed for the purpose. I say it is not so much from a lack of knowledge, but rather from lack of application.

There is no question but what the use of hot air in connection with a certain medicament for sensitive dentine, a few years ago, resulted in the death of a good many pulps, and we should be careful to know what effect any new treatment for the same purpose may have on the pulp.

No doubt many pulps will be sacrificed by the use of cocain and cataphoresis.

It is often a difficult thing to diagnose an exposed or nearly exposed pulp, and especially is this so when the dentine is insensible to pain. I would not underestimate the value of a method whereby the dentine can be desensitized, but would urge that unusual care be exercised in its use.

Whether cataphoresis will prove to be detrimental to the

welfare of the pulp remains to be seen, but certainly unless great care is used many pulps will be destroyed by its use.

The object of this paper being more for the purpose of calling attention to this subject in a general way than to offer any specific method of protecting the pulp, the writer will briefly outline some of the best modes of pulp protection.

1st. I would protect the pulp by impressing upon the mind of the patient the importance of submitting to a frequent examination of the teeth. Those of you who have the best control of your patient, have the fewest pulps to cap or destroy and the fewest abscesses to treat.

2nd. I would protect the pulp by a careful and skillful manner of preparing cavities.

3rd. By the use of some non-conducting lining where necessary. For this purpose tin-foil, varnish, chloro-percha and gutta-percha are all valuable.

Tin-foil I have used a great deal under amalgam filling and believe that it is a very valuable thing, and under gold we all know that it is a good thing.

Oxy-phosphate of zinc cement has never seemed to me to be particularly good for the purpose. Whether there is in the acid something which is detrimental to the life of the pulp I do not know, but it seems to me that I find a good many pulps which have died under cement fillings or linings.

A Case of Alveolar Abscess Discharging into the Antrum.*

BY W. BUZZELL, D.D.S., PORT CLINTON, O.

IN June, 1892, a young woman came to me to have some teeth extracted. She told me she had been suffering for some time with severe pain in the left cheek, which was much swollen. I found a fistulous opening into the antrum, between the second bicuspid and first molar, through which a thin watery pus was discharging. The teeth on that side were all present except the third molar, and all sound and alive except the first bicuspid, which had been devitalized; the root-canals having been filled some years before.

* Read at Northern Ohio Dental Society, Cleveland, June, 1896.

She said she had never felt any inconvenience from it since it was filled, and I found no tenderness on percussion. Hence I excluded this, and thought it to be a catarrhal condition of the antrum.

I treated it for a few days by injecting peroxide of hydrogen, followed by a thorough washing with Dobell's Solution.

| | | | | | | |
|---|---------------|---|---|---|---|-------------|
| R | Carbolic acid | - | - | - | - | grs. xxiv. |
| | Biborate soda | - | - | - | - | |
| | Bicarb. soda | - | - | - | - | aa grs. xl. |
| | Glycerin | - | - | - | - | fl. oz. ij. |
| | Water | - | - | - | - | O j. |

Under this treatment the troublesome symptoms soon disappeared ; the discharge ceased apparently, and I dismissed the case and allowed the sinus to close.

About six months afterward she came again with the same trouble, and insisted on my extracting some teeth ; in particular the second bicuspid, which was decidedly sore and somewhat loose, though sound and alive. Even at this time the devitalized first bicuspid had given no evidence of guilt.

I made an opening into the antrum, at the site of the original fistula, and a large quantity of thin pus escaped. I treated as before for some time, but at each sitting pus was in evidence. At last I did what I should have done in the first place. I drilled longitudinally through the defective first bicuspid, and found that I could insert a probe nearly an inch and a-half, and that liquids injected into the antrum, passed freely through the opening in the tooth. I extracted it, washed the cavity with peroxide of hydrogen and followed it with Dobell's Solution. The wound closed in a few days, and there has been no further trouble.

I have thought this case worth bringing before you, for it shows the necessity of thoroughness in root filling, and the danger of needlessly and uselessly extracting valuable teeth, and therefore emphasizes the necessity of accurate diagnosing and warns against hasty procedures in obscure cases.

Porcelain Technic.*

BY GEORGE EDWIN HUNT, D.D.S., INDIANAPOLIS, IND.

IN the past the practical teaching of porcelain work in our colleges has been more or less neglected owing to the cost of the material used in its construction. The prices of platinum, pure gold, and tooth-body are, and always will be, such that no college can afford to allow its students much latitude in their use in the technic laboratory. A few of the students in some of the colleges gain a practical knowledge of platino-porcelain crown work in the infirmary, and a very limited number may be fortunate enough to get a continuous gum denture to construct during their college career. But the class of people from which our clinics are derived can seldom afford to pay the bare cost of material used in a continuous gum denture and the great majority of young dentists are compelled to either attend a post-graduate course to perfect themselves in this work, or to buy a furnace and obtain their knowledge by experimentation. The difficulties thus placed in the way of obtaining practical information concerning this branch of prosthesis deter many of the younger men from attempting it, so that the use of continuous gum dentures, the most artistic and satisfactory substitutes for the lost organs that can be made from the hands of the dentist, is largely confined to a few progressive men in our larger cities.

In an endeavor to reduce the item of expense, the Indiana Dental College began experiments with low fusing enamels, such as are employed by jewelers. As a result of many trials, a white enamel known as "White Enamel No. 20," imported by F. Gesswein, No. 39 John street, New York, was decided upon as being the best adapted to the purpose. This enamel is one that will fuse on silver solder. It cost \$4.80 per pound. A pound economically used would probably serve to finish twenty-five upper continuous gum dentures, but in the hands of inexperienced students it will scarcely answer for fifteen each.

The enamel comes in vitreous, irregular shaped cakes. Mr. Gesswein informed us on inquiry that he had no facilities for grinding it. That was a serious drawback, but the firm of Eli

*Read before the National School of Dental Technics, Saratoga, N. Y., Aug., 1896.

Lilly & Co., manufacturing chemists, kindly reduced it to a crystalline form for us. Experimentation, however, showed that in this form, about like granulated sugar, it was still unfit for use, and it was further reduced to a powder by the aid of a mortar and pestle, before the college course was attempted.

Our method of teaching during the past year was as follows: The class was divided into sections of ten. Each section was taken first through a course of crown-work, which course was completed by that section before the next section began. Impressions were taken of each other's mouths, and the plaster models made from these were articulated. It was required that each student construct at least two crowns, an upper bicuspid and an upper incisor. The selected teeth on the articulated model were trimmed to the desired shape, and 28 gauge brass collars, lapped, and soldered with silver solder, were fitted to them. This work was all done before the section was assembled, as their previous knowledge of crown- and bridge work sufficed up to this point. They were then instructed in bracing the band by means of a counter sunk floor of brass; in sloping the labial aspect of it to accommodate the porcelain face, and in soldering on a post for use in the canals of pulpless teeth.

Each student then ground his facings, using cuspid plate teeth with horizontal pins for the bicuspid and the proper plate teeth with similar pins for the incisors. When this had been satisfactorily accomplished, the facing was adjusted *in situ*, the band and facing invested and the pins in the facing soldered to the band and to the post, if one was used. The bands were then laid aside and the section instructed in burning batches of enamel on a piece of brass plate, using both the gas and electric furnaces. This was continued until every member of the section had successfully baked some enamel, and had gained a fairly accurate knowledge of the amount of heat required to accomplish this result. The tendency, of course, with such a low fusing body, was to overburn, but after a few trials, their eyes were educated to recognize the appearance of the baked enamel. Instructions were then given in backing up the crowns with the body, shaping, drying and running through the furnace two or more times, as was necessary to acquire the desired form.

After completing this work, and while other sections were receiving similar instructions, each student swaged a brass plate

and doubler and soldered a half round brass wire on the rim. They then set up the teeth, invested plate and teeth, and soldered. The teeth were bought at wholesale by the college and sold to the students below cost. Finally the body was added and the case baked until a satisfactory result was attained.

I am well aware that this work as outlined presents some seriously objectionable features and I do not contend that it is as yet, entirely satisfactory. The extremely low fusing point of the enamel is a drawback and the student will require some practice with tooth bodies before he can attain the best results, but that is the case with any of us when we change from use of one make of body to that of another make. Again, the enamel is brittle and friable, it does not adhere to the plate or collar as well as could be desired. Then, selection of color or shade in the backing of the crowns is impossible, the final finishing of the plate with gum color has not yet been successfully accomplished. In this latter connection, experiments were made with the colors used in porcelain art work, some of which fuse at a very low heat, but their practical utility in the course was believed to be so slight that the experiments were dropped before any definite conclusion was reached. The course is, as I say, crude. Further experiments should be made with copper or German silver in place of brass; or perhaps a more suitable enamel than the one mentioned may be discovered.

But, admitting all these defects, we are still of the opinion that such a course as has been detailed is calculated to give the student a deeper insight into this branch of dental prosthesis than previous methods of teaching have offered.

Dental Education, Literature and Nomenclature.*

BY LOUIS OTTOFY, D.D.S., CHICAGO.

ACCORDING to the information in possession of this section regarding them, we have separated the dental schools of this country into three classes:

1. Dental colleges in active operation.
2. Dental colleges organized during the past year.

* Abstract of Report at American Dental Association, August, 1896.

3. Corporations conferring the dental degree, but regarding which no further information is at hand.

New Schools organized during the year, (no sessions held yet);

Colorado School of Dental Surgery, Denver, Col.

International Dental College, Chicago, Ill.

Pittsburg Dental College, Department Western University of Pennsylvania, Pittsburg, Pa.

Corporations conferring the dental degree, (no other information at hand):

German-American Dental College, Chicago, Ill.

Kansas City College of Dental Surgery, Kansas City, Mo.

Wisconsin College of Dentistry, Milwaukee, Wis.

TOTAL—1. Dental Colleges in active operation, . . . 46

2. Organized during the year, 3

3. Corporations conferring the dental degree, . 3

According to these statistics there were matriculated as students of dentistry during the past year 6,293 persons, 6,013 of whom were in actual attendance, and upon 1,448 of whom the dental degree was conferred.

The following table will indicate the increase in the number of graduates since 1886?

| | For the Year. | Grand Total. |
|------------------|---------------|--------------|
| 1886, | 503 | |
| 1887, | 597 | 1,100 |
| 1888, | 746 | 1,846 |
| 1889, | 796 | 2,642 |
| 1890, | 963 | 3,605 |
| 1891, | 1,241 | 4,846 |
| 1892, | 1,483 | 6,329 |
| *1893, | 379 | 6,718 |
| *1894, | 905 | 7,613 |
| 1895, | 1,233 | 8,846 |
| 1896, | 1,448 | 10,294 |

It is deserving of mention that every college now actively engaged in teaching, or which has been organized during the year, (except one whose announcement has not yet been published) is either a member of the "National Association" of Dental Faculties, or an application is pending, or it has announced its

*The decrease in 1893 and 1894 was due to the operation of the three year course.

intention to conform to the rules of the "National Association" of Dental Faculties.

In the latter class there are but three colleges in the country and those intend to apply for membership, as soon as they have complied with certain necessary requirements.

This information might not be considered of much consequence were it not for the fact, that the National Association of Dental Faculties, has at its session this week, taken one of the most important steps in the history of dental education, by the adoption of a plan for the admission of students to colleges. Hitherto an applicant for admission presented himself for admission, and it was left wholly to the judgment of the official of the college to accept or reject. There is no doubt that this imperfect system resulted in the admission of many who were not properly qualified. By the plan just adopted, the requirements for admission into any of the colleges is identical, and the requirements are graded from year to year, in such a manner that beginning with next year the educational standing of our students will be higher and increase within four years to a plan practically equivalent to a high school education.

The Section deems this action one of the most important advances made in dental education.

ALL SORTS.

The Mouth-Mirror.

To keep any kind of a mouth-mirror reasonably aseptic I have a small vessel like a watch-crystal or other shallow dish on my operating case constantly filled with electrozone. After each patient, and frequently during the sitting of one patient, I dip the glass and such parts of the frame and handle as come in contact with the mouth, into this solution and wipe off thoroughly. Before doing so, however, I of course wash off any visible contamination with water. I use the full strength of the solution of electrozone, called dental meditrina. As a further precaution I keep in the drawer of my cabinet, where my mirrors are, a slab of plaster of paris and sand saturated with Formaldehyd, as recommended by Dr. Cassidy a few years ago.

But in spite of all the precautions it is possible to adopt with a glass

mirror, such as we are compelled to use for want of anything better, we may still be quite sure that it is *not* thoroughly aseptic at any time. Still it may be rendered at least innocuous by taking the precautions I have mentioned, and it is our duty to be religiously attentive to every detail of cleanliness that will tend to protect our patients who trust themselves to our care from anything septic or unclean.—H. B. TILESTON, *Dental Digest*.

Loretin, the New Antiseptic.

DR. S. E. GILBERT contributes an article on this subject to the *International Dental Journal* and from it we abstract as follows:

“The advantage of iodine preparations in antiseptic surgery have been firmly established, and that of iodoform has become the one most generally used, but with all of its good qualities there are several not so desirable. The disadvantages of its odor, toxic and irritant characters, greatly limit its use, and a new iodine preparation has long been desired and sought which shall be free from odor and absolutely non-poisonous. Loretin supplies this want. It has a complex constitution, is a bright yellow-colored crystalline powder not unlike iodoform in appearance. It is slightly soluble in water (about two parts to one thousand) and alcohol. It is practically insoluble in ether and in oils, but forms emulsions with oily liquids, and collodion, a soluble form of loretin, is also prepared. Being an acid it forms neutral salts with alkalies, which are easily soluble in water, forming solutions of an orange-red color. The calcium salt is insoluble in water, and can be easily precipitated on gauze impregnated with a solution of calcium chloride. Loretin gauze possesses the bright red color of this calcium salt. It may be employed as loretin powder, either alone or mixed in different proportions, with suitable materials, as calcined magnesia, French chalk, starch, etc. . . .

Its non-toxic property has been fully established by Professor Claus and Dr. Ammelburg by careful experiment, and borne out by clinical experience. Professor Schinzinger says he has employed loretin with great success in the treatment of boils, burns, lacerated wounds, poisoned cuts, and in gynecological practice; also in many major surgical operations. In none of these was there a single instance of toxic effect.

In purulent discharges it quickly removes the offensive odor For nearly a year I have been using it in the treatment of pulpless teeth and teeth having abscesses in all stages with and without fistulous openings, and where I have formerly used iodoform, etc., and am now ready and fully prepared, from clinical experience, to say that loretin is superior in my hands to any of the many antiseptics I have tried. One pleas-

ant thing to me about it is that now the persistent odor of iodoform in my office is a thing of the past, and patients are no longer asking "what that horrid smelling stuff is?" no more nausea that would sometimes happen when iodoform was used.

The action of loretin is prompt in the treatment of putrescent teeth. I have had a great deal of pleasure in its use in the treatment of putrescent pulps, having used it in several ways, but most in combination with oil of cassia, as this is a pleasant vehicle for conveying the loretin into the pulp-canal.

It may be well to give the method employed in treating these teeth. After having prepared the tooth crown the root-canals should be well opened, going as near to the apex as possible; the medicament is then pumped into the root by means of a broach wound with cotton, then a string of cotton saturated with the loretin preparation is packed in the root and the patient dismissed for a week; upon the patient's return the cotton is removed (of course no saliva is allowed to enter the tooth), and if there is no odor other than that of the medicament, another string of cotton is placed in the root same as before, but this is covered with Gilbert's temporary stopping, closing it tightly; the patient is instructed to return in a week in case there is no inflammation, but should the tooth become sore to return immediately, when the temporary stopping is removed, as the tooth by this tenderness indicates that it is not yet in condition for filling; if the patient returns at the expiration of the week with no soreness in the tooth, it is ready for the temporary or trial filling, which is as follows: Form temporary stoppings into cones to fill the canals; this is done by warming the stopping and rolling it between the thumb and finger; remove the dressing that is in the tooth, and with a cotton-covered broach pump in a little of the loretin mixture, following with chloro-stopping;* then insert the temporary stopping cones in the canals, filling the crown with white temporary stopping. This filling is generally allowed to remain for two weeks, at the end of this time we are sure that if there has been no trouble it is safe to fill permanently. In doing this the stopping in the roots is not disturbed but allowed to remain, as there is no better root-filling.

The above method is where a fistula has not been established; in case it has, the tooth is opened thoroughly, passing through the apex, the loretin mixture is pumped through the tooth until it appears on the gum through the fistula; this is followed by pumping the chloro-stopping through until it also appears on the gum. The temporary stopping cone is inserted in the roots, the tooth filled with white temporary stopping, and the patient dismissed for from three to six weeks or until the abscess

*Chloro-stopping is made by dissolving white temporary stopping in chloroform.

has thoroughly healed, which is generally about four weeks, unless there is carious bone or some cause other than simply the abscess. Of course, cases out of the common line are treated according to the cause. The treatment has proved successful in many cases of long standing. Care should be used not to flood the crown of the tooth with too much iodoform, as it has a tendency to darken it. I have had no trouble that has amounted to anything thus far, as I have tried to use care in this direction."

Death from Septicemia, following Tooth Extraction.

Port remarks that when we consider the great numbers of micro-organisms that develop in the mouth, it is remarkable that extractions are not far more frequently the source of serious infections. Miller, in his book, cites sixty cases of infection from this cause, one-half of which resulted in death, while the other half in due time recovered. Port relates a case of a gentleman, age 22 years, of good health, for whom an inexperienced person extracted the lower right first molar, with the key. The patient was taken with a fever, manifestations of infection presented, and the man died within four days. The autopsy revealed under the right half of the inferior maxilla, an abscess the size of a large chestnut, from which the pus had followed the muscles of the neck down to the mediastinum. The two plural cavities rendered from 20 to 30 cc. of a fetid, brownish-yellow pus. The pleura did not seem to be affected, but the pericardium showed a little of the purulent exudate. Microscopical examination of pus from the abscess of the mouth, revealed the presence of streptococcus, diplococcus, and club-shaped organisms. The diplococcus had every appearance of the sputum septicemia, described by Miller. Pus from the thoracic cavities, revealed the presence of the same sort of organisms.—*Journal des Connaiss Medicales*—*Translated for the Ohio Dental Journal.*

Suggestions on Crown Work.

To make sharp, well-formed cusps by the Hollingsworth system, make the counter-die as directed. Smoke this, place it into the rubber ring and pour upon it Melotte's metal, nearly cold. Scrape from the die about the thickness of the gold to be swaged. Anneal the gold, partly swage, anneal again and drive home.

If the Hollingsworth cusps be not at hand, select a tooth having the size and cusps wanted. Imbed it in sand or any investment, exposing

the cusps as desired. Place a ring about an inch in diameter, made of brass or any other metal, around this, and pour into the ring, over the cusps, some of Melotte's metal. This will give a counter-die. Make the die as directed above.

The die may be made first by taking an impression of the cusps in plaster and pouring the metal, quite cool, upon this, when the plaster has become hard and dry.

The metal should always be poured when it is just hot enough to flow.

To make an all gold bicuspid or molar crown, I proceed as follows: Prepare the side of the crown so a wire measure at the neck may be removed without breaking the wire. Then take a plaster impression of the tooth. Place around this a metal ring. Fill the impression of all the teeth, except the one wanted, with plaster. From the tooth wanted bevel the plaster to the upper edge of the ring. When this plaster is hard and dry, pour into it Melotte's metal. Now cut away the metal well up the side of the tooth, representing the cervical margin of the gum, so the band will pass well up. Dress the side of the crown so that the wire measure will pass over the metal tooth as it did over the natural one. This wire measure, cut and straightened, is the length of the gold required for the band. Fit the band down well all around and leave it long enough to extend just over the turn of the grinding surface. Scrape from the grinding surface of the metal tooth the thickness of the gold wanted here. Hammer and burnish the edge well down to the metal tooth and file it to a sharp edge. Now contour as desired. Place the band back on the metal tooth and, with hammer and soft wood, drive a piece of well annealed gold to a perfect fit over the cusps and end of the band. Solder and dress down.

Any broken off molar or bicuspid may be thus capped if it be first built up with cement.—H. W. ALLWINE, *Digest*.

The Application of the Principle of Crown-Work to Metal Plates.

The great difficulty in making gold dentures, when the teeth are ground to the plate, lies in the impossibility of grinding the teeth with sufficient accuracy to prevent an influx of food that will in time become foul. Although rubber attachments have to a certain extent lessened this objection to artificial dentures, still, when red rubber is used, its shrinkage from the porcelain and metal will invariably allow some small recess for leakage. And while pink rubber obviates the leakage to a

great extent, the deterioration that invariably attends its prolonged presence in the mouth is a serious drawback.

My brother, Dr. L. F. Head, and I have been experimenting in this line for some years, and while our results are neither startlingly valuable nor original, still it would seem that we had solved the problem of making the porcelain lie absolutely against the gold of the plate. The ordinary process, as you know, is to strike up the plate, grind the teeth as closely to it as possible, back them, and solder the backing to the plate.

The variation from this would seem, now that it is none, comparatively simple. Instead of grinding the tooth to fit the articulation, it is ground accurately to the plate so as to be a trifle short. It is then backed up with a piece of thirty-two to thirty-four gauge annealed gold, which extends all the way between the plate and the porcelain to the cervical margin of the tooth. In burnishing this thin gold into the inequalities of the porcelain, the metal becomes springy and refuses to hug close to the tooth. When the backing has been trimmed to the size desired, it must be taken off and bent to an angle less than the angle made by the bottom and the side of the tooth, and when it is slipped in position again the gold and porcelain will lie snugly together everywhere. Over this thin backing a thicker piece of plate is placed that covers the entire inside of the tooth, but does not extend between the plate and the porcelain, when the reinforced backing can be secured by bending, splitting, or riveting the pins, as the mechanic may see fit.

In preparing the case for investing, the tooth should be so cemented to the plate that all cement can be easily removed with a fine instrument after the investment has become hard; and all around the cervical margin where the tooth backing touches the plate, a fine paste of borax should be placed to prevent the soft investment from marring the perfect filling in of the solder. Great care must also be taken that the plate and backing be well cleansed and borax used before the tooth is cemented in position. The investment of plaster and sand, or plaster and marble-dust, as may be desired, must be flowed over the tooth and around the plate with all the care one would exercise in investing a rubber denture; for if spaces are left where the solder can pinch the porcelain, chipping will infallibly occur.

When the investment is hard, pick away the cement, place the solder in position, and heat up from underneath until the solder starts of itself to flow, when, with the aid of gravity and the pointed flame, the solder will run down underneath the tooth and fill all the places solidly.

Where a tooth stands alone on the plate, the well-known principles of crown-work are to be followed in their severe simplicity; but when three or four teeth are to stand together side by side, the following precautions are imperative:

Each tooth must be so isolated by investment as to make it impossible for the solder to flow from one to the other, and spaces must be left between the teeth so that the contraction of the plate on cooling will not push them against each other. Sometimes it has been found advisable to slip small pieces of mica in between the necks of the teeth, but it must not extend up high enough to jamb in between the porcelain. Where the teeth would naturally touch small pieces of paper should be placed, which burning out under the flame, give a space that, while it is ample for safety, is quite imperceptible in the mouth.

When a single tooth is to be surrounded by solder, just as a rubber tooth is by rubber, all angles should be ground off the tooth where the solder could possibly cause the backing to pinch the porcelain: the backing should be cupped and invested around the tooth everywhere the solder is expected to flow; then, prior to splitting the pins, the backing is partially taken off and thin paper placed all around the edges between the metal and the porcelain. It is then slipped back into position and secured.

The tooth is then waxed to the case in the same way that one would wax a rubber case, care being taken not to flow the wax beyond the metal over the tooth.

This is then invested in the ordinary way, the wax boiled out, milk of borax wiped in with a brush, and the case is ready for filling in with solder, which is readily and safely accomplished if the heat is properly applied.—DR. JOS. HEAD, in *International*.

Experiments with Eucain.

Concerning eucain, a case is recorded in a late number of the *Zahnärztlichen Rundschau*, in which, after the injection of the medicine, dangerous symptoms manifested themselves.

Aside from the usual swelling which follows the use of eucain, no such symptoms have, up to this time, previously been observed.

Prof. Charters, of the University of Glasgow, has prosecuted experiments both with cocain and eucain, which were much to the advantage of the latter drug, at least so far as the animals (Guinea-pigs), which were used for the experiments, proved.

He used a solution in water of the hydrochlorates of cocain and eucain and found that the fatal dose of eucain was 90 mg. per kilo of the body-weight, that of cocain being 68 mg.

The cocain caused greater restlessness, greater salivation and opisthotonus, and also more rapid breathing than eucain.

He noticed further, that the physiological effects of the eucain did not follow so rapidly as those of cocain, when equal doses were used under similar conditions. The effects of the eucain were of longer duration also and less intense.—*Translated for the Ohio Dental Journal, by Dr. J. W. Van Doorn.*

A Method of Bridge-Work.

For a number of years, I have backed up teeth with platinum or pure gold—platinum generally, then adding another backing heavier with highly platinized gold—what I mean by that is gold and platinum melted together, so that it makes a hard material there for a cutting edge for the incisor. This process is the same, except when I get to the point of soldering I remove the porcelain faces; in order to preserve the bed for the porcelain face perfectly. I paint it over with a camel's hair brush, being careful to introduce enough in the rivet-holes to preserve that, with prepared chalk or whiting; then lay on the metal in perfect contact to prevent any solder flowing over the surface. If you get any solder on, you spoil your perfect adaptation to the porcelain face.

There is another point I want to mention here: in arranging this backing, I leave it somewhat prominent, and after it is soldered I bevel it from the anterior surface back, making a cutting edge somewhat similar to a blunt chisel.

A tooth should be concave on the cutting edge.

I stick the second backing on the porcelain face, stick them together with beeswax, then do my painting with the prepared chalk, dry it out and solder those two pieces together, using coin gold solder. Now, I put it in position with the porcelain faces on so that you get the right position of the teeth; then remove and solder as you would any ordinary bridge; then polish it so as to have a clean surface to rivet to, partially counter-sunk; then use a thin coating of cement, thin enough to press out, take the pliers and press down very firmly so as to cause all the cement to press out—practically all, and yet there is enough there to make it absolutely waterproof under the backing. I claim there is some advantage in that. If the rivets are too long, I grind them down so they are in proper shape; I then place it on lead—by the way, you want to get as soft lead as you can; this common tea lead is very nice to melt up and get a block to rivet on, using a small rivet hammer. I claim this: you do not break any porcelain faces by heating; sometimes, you know, the face will check underneath and you do not know it. Now, the question was asked as to whether there was any advantage in the matter of repair. I never have had one break yet. There, however, will be this advan-

tage: there is not that rigidity about them that there would be if they were soldered on, being imbedded with this cement very firmly.—DR. SHRIVER, in *Western Dental Journal*.

To Distinguish Cocain from Eucaïn, and to Detect a Mixture of the Two.

The excessive solubility of hydrochlorate of cocain permits its being distinguished from hydrochlorate of eucaïn, for eucaïn is soluble one part in nine of water, while cocain is soluble in less than its own weight of water.

To detect eucaïn that may be fraudulently added to cocain, because of its costing less, Vulpius states that by dissolving 0 gr.-10 of the suspected salt in 50 cc. of water and then adding two drops of aqua ammonia, if the cocain is free from eucaïn the liquid will remain clear, even though a few crystals may be deposited, whilst if eucaïn is present, the solution becomes cloudy or milky in appearance.—*L'Odontolgique*.
—*Translated for the Ohio Dental Journal*.

Hypertrophy of the Gums.

Hypertrophy of the gum may result from the irritation caused by badly fitting dentures or accumulations of tartar. In such cases the hypertrophy is not great, and it is very seldom that it is necessary to do anything more than remove the cause of irritation. But in children a peculiar variety of hypertrophy of the gums is sometimes met with. It commences at the time that the temporary teeth are being cut, viz., between the ages of six months and two years. The gum increases in size so that eventually the teeth become almost completely hidden from view by large papillomatous or polypoid-looking projections of the same color as the normal gum; although in places they are soft, vascular, and spongy-looking, they are mostly firm and fibrous to the touch. The disease usually affects the whole of the alveolar arch in both jaws, but may sometimes be limited to the incisor region. In some cases the overgrowth is sufficiently large to project from the mouth and to bulge out the cheeks. Mastication is considerably hampered.

Microscopic examination proves the growth to be a pure hypertrophy of the gum, chiefly the fibrous portion. In structure it consists of a dense stroma of interlacing fibres, containing much glandular tissue in its interstices and covered on its surface by large and vascular papillæ.

The growth appears to start from the periosteum around the necks of the teeth.

The subjects of this disease are often deficient mentally. Sometimes it occurs in several members of the same family.

Treatment. It will not suffice simply to pare away the hypertrophied tissue, as recurrence is pretty sure to follow. This is owing to the disease affecting the sockets of the teeth as well as the gum. To effect a permanent cure it is necessary to remove the alveolar margin as well. The germs of the permanent teeth in the vicinity of the disease must be avoided as far as possible.

Polypus of the gum is the name given to a localized hypertrophy of a portion of gum usually between two teeth. It is produced by the irritation of a rough or carious tooth, tartar, or some portion of an artificial denture. In microscopic structure it resembles gum tissue. Sometimes the growth encroaches upon the cavity of a carious tooth so as to simulate polypus of the pulp, but it may be distinguished from the latter by its greater sensitiveness and by its pedicle or base of attachment being between the teeth and not within the carious tooth.

The *treatment* consists in removing the source of irritation and snipping off the growth with scissors. Its base should be touched with nitrate of silver or with the electric cautery. Recurrence does not take place after effectual removal.—E. W. ROUGHTON, *British Journal*.

A Case of Fracture of the Left Superior Incisor.

The patient, a boy twelve years old, fell in the school-yard and, striking the pavement, fractured both superior central incisors; the right central having the mesio-labial angle broken about one-fourth the length of the tooth, while the left incisor sustained a more extensive fracture of the mesio-palatine angle, extending beyond the free margin of the gum. The boy presented himself, accompanied by his mother, about two hours after the accident, and, being of a very nervous temperament, was greatly alarmed. The pulp of the left incisor was nearly exposed, being covered by a very thin lamina of dentine, through which could be seen the inflamed pulp; the patient could not draw air through his lips without suffering intense pain. After assuring the mother and boy that the disfigurement could be overcome, the injured surface was bathed with oil of cajaput and some temporary stopping placed to protect the sensitive parts, a capsicum plaster applied, and the patient furnished with a supply. He was then dismissed for four weeks, at the expiration of which time the fractured surfaces were found to be still extremely sensi-

tive, even to the application of absorbent cotton. A 10 per cent. solution of cocain was applied, using the electric current for about twelve minutes. Retaining grooves were then cut with impunity, and the left incisor was built down until the gold reached the mesio-labial angle; the cutting edge of the tooth was ground to resemble its fellow and the right incisor was then restored at the mesio-labial angle with gold. About ten days later bands were adjusted to the teeth adjoining the left central, holes drilled in the soldered ends of the bands left on the labial surface of the tooth, a piece of fine piano wire placed through all three bands, and to prevent the teeth being forced out of line in the arch, heavy waxed floss was tied around the four permanent incisors and the two temporary cuspids. After five days, the tooth, which was fully one-third shorter than its fellow, was elongated sufficiently to place the retainer.

After a lapse of over six months the pulps in both centrals are found to be alive and healthy and the patient presents a natural appearance, the result pleasing to all interested parties and highly satisfactory to the operator.—F. C. GREGORY, in *Items*.

Bridge Strain.

It is an impossibility to place a bridge of any kind in the mouth without forcing the teeth to which it is anchored to do a large amount of unnatural work, and the ratio increases with every tooth added to the bridge; and as a natural consequence the permanence and usefulness of the bridge decreases in the same ratio.

It is an undisputed fact, that to continually overwork and abuse any organ of the body is a transgression of nature's laws that will not be tolerated, the penalty for which is disease, and it must be borne in mind that the teeth are no exception to this rule. The unnatural strain, pressure, overwork and motion they are subjected to when used as piers for a bridge causes inflammation, absorption, and ultimate loss of the teeth.

On the immovability of a bridge depends to a great extent its usefulness and permanence, and it is unreasonable to expect the roots of two teeth to rigidly anchor a bridge carrying five or six teeth. If it is not immovable it will not be impermeable, and if it is not the latter it will soon become practically useless, unhygienic and dangerous. The indiscriminate use, or I might say abuse, of bridge-work is working a great deal of harm and is creating a strong prejudice against it in the minds of the people, which would not be the case if it were confined to its legitimate field.—W. H. STEELE, *Dental Digest*.

"A Method of Curing by Cleansing, Asepticising and Permanently Filling Putrescent or Suppurative Pulp Canals, at One Sitting, that has not Shown a Failure in Three Years."

Case: Superior central incisor, left side. Some peculiarities developed in diagnosis. Tooth, very opaque upon transmission of reflected light; quite badly discolored. Slight soreness peculiar to diseased pulpless teeth. No fistula present. Dr. C—— gives as previous history that the tooth has been in condition as indicated externally for many years. Pulp canal never been entered previously.

After placing on the dam, the operation consisted of opening into pulp canal. Putrescent odor markedly present, with dark, watery pus.

Not the slightest pain was experienced until the broach was inserted about one-half the length of tooth, when shock was felt, living pulp encountered.

Hemorrhage followed; applications of 50 per cent. sulphuric acid for a few minutes caused anæsthesia and allowed of removal of remaining pulp tissue.

Followed this treatment with a solution of sodium bicarbonate until chemical action ceased.

Pulp canal then freed of fluid. No real effort at drying, because the moisture left in the canaliculi acts as an auxiliary and permits of more perfect sterilization by the carbolic acid, C. P. (de-laquesed crystals), which was used next.

This allowed to remain *in situ* until the permanent pulp canal dressing of eucalypto-percha was prepared, which is done for each such operation by using any of the low heat gutta-perchas with eucalyptus oil (in glass watch crystal) as a solvent. Tooth then dried thoroughly with bibulous paper canal points, hot-air blast from syringe and Evans' nerve canal dryer.

This *positively* accomplished, the eucalypto-percha dressing in very plastic state was inserted with smooth broaches until the canal was filled; followed this with a few fibers of cotton carried to the apical foramen and compacted; followed this with a gutta-percha canal point, of the proper diameter, to admit of being carried to, and compressed in canal beneath cotton, which forces the excess of eucalypto-percha from canal into pulp chamber.

That which remains is taken up by the g. p. point immediately, which expands a trifle (the reverse of chloro-percha) and most positively fills the root canal. Any oil which remained was removed with alcohol and the cavity lined with phosphate.—L. C. LeROY, in *Items*.

“ A Method of Obtaining Plaster-of-Paris Impressions and Occlusions of the Teeth Simultaneously for Crown or Bridge Cases, Producing Models With All the Parts in Perfect Condition.”

Operation performed for the patient; first noting condition of all parts, paying attention to the teeth on side of mouth opposite to that of which the impression was desired, as those parts must be the guide when teeth are occluded, while the plaster-of-Paris is hardening. Required the patient to open and close the teeth several times so that he closed intelligently when finally required.

In this instance a substitute for impression cup—yellow bees wax (sheets)—was used. The impression cup being improvised of the desired shape and size.

The doctor cut from a sheet of wax, six inches long, a three-quarter inch strip and united the edges, making a ring oval in shape divided midway, with a septum of wax, causing it to adhere to the ring with melted wax. This made a double impression cup or plaster receptacle.

The plaster was prepared and the required quantity placed in one side of the wax receptacle, and a similar quantity in the opposite side. The whole being placed in the mouth, the patient was requested to close the teeth, biting *through* the wax until the teeth antagonize as they would in repose; opening the mouth fractured the plaster. The parts were removed and subsequently inserted into the wax cap, pieces secured by melting the wax cap at places to hold together, varnished and placed in an articulator, both impression and bite being filled at once.—L. C. LEROY, in *Items*.

Blood Poisoning after Tooth Extraction.

Two cases have lately come under our notice of fatal blood poisoning occurring after tooth extraction. In one case, that of a sailor in New South Wales, it seems that the patient had applied some lotion to the afflicted part. Medical witnesses differed as to whether this lotion would have a deleterious effect; one medical man saying that it was harmless, while another affirmed that if the man had not used it, he would still have been alive. In the other case, that of a boy whose tooth was extracted by a chemist at Framlingham, it appears that the lad had lanced his own gum with a pocket knife, and a verdict of death from natural causes was returned. We cannot be too careful in seeing that all our instruments, especially forceps, are thoroughly well cleaned after each operation, as well for our own protection as for that of the public.—*British Journal*.

Aluminum—A Warning.

As aluminum is now so extensively used in the manufacture of various instruments I think the following facts will be of interest :

I was using an aluminum spatula the other day for transferring small portions of different powders to test tubes, and having wiped it clean had laid it down. In a few minutes' time I noticed it had become covered with what closely resembled a white growth, and although I removed this it formed once more. When carefully examined this white deposit was seen to consist of a brush-like mass of filaments radiating in all directions, not unlike hyphæ of a vegetable growth, standing erect on the flat surface of the blade. This continued to grow quite visibly, but at length over-balanced and crumbled to a bulky white powder, which qualitative analysis proved to consist of alumina. A few experiments soon indicated that mercuric iodide had been the initial cause of this, as this substance at once produced a similar result with another piece of aluminum. I next tried various salts of mercury, including the two chlorides, the nitrate, sulphate, and oxide, and found that they all had more or less the same effect. Indeed, a minute globule of the metal was sufficient to start the "growth." The reason of this curious action would seem to be that mercury is deposited in the metallic condition on the aluminum, forming an amalgam, which at once acts on the moisture present in the air or on the surface of the metal to form alumina and liberate hydrogen. The mercury being again set free by this reaction once more attacks the aluminum, thereby prolonging and increasing the action indefinitely. A small strip of this metal, weighing half a gramme, was left in contact with powdered mercuric chloride for about a couple of minutes, then well washed and dried with a cloth. Action at once proceeded, and after an hour the aluminum was again thoroughly washed, dried, and then weighed. The loss in this interval of time amounted to a little over 8 per cent. of the total weight; in fact, the strip had been perforated in several places. The action is so curious as to be well worth repeating by any of those interested.—P. A. RICHARDS, in *The Lancet*.

Method of Removing Collar Crowns.

With a sharp spear drill, lubricated with glycerine, drill through the backing at a point over the pin. If the drill is well tempered this will not be very difficult. Enlarge this hole slightly with a round bur, then with a wheel bur cut the pin free from the cap. The crown can now be worked off without mutilating the band. Next, the pin remaining in the tooth root must be removed. To do this bur away the cement around

it with a fine spear-pointed fissure drill, being careful not to cut the metal itself. This should be done to a depth sufficient to allow a firm grasp of the pin with the sharp-nose pliers now supplied for bending the pins of artificial teeth. Do not attempt to draw the pin out by direct force, but twist it slightly to disintegrate the cement, when it will be found that the pin will come away with little effort. You have thus succeeded in removing the crown without mutilation.

When the root has been restored to a healthy condition, replace the crown, insert a platinum and iridium pin through the opening in the backing which was drilled to release the original post. Fasten into position with hard wax, remove carefully, invest, and solder.—R. M. SANGER, in *Items*.

Hygiene.

From an article on this subject in the *Dental Review*, by Dr. T. E. Powell, we extract the following :

“I shall endeavor to offer some suggestions which will, I believe, if followed by members of our profession, do much toward the maintenance of a perfect mental and physical equilibrium.

Let the first consideration always be that of good ventilation. Be sure there is plenty of fresh air in the room all of the time. There should be no direct currents or draughts. The widows ought to be so adjusted that the air may enter and circulate without disturbing any light substance in the room.

In order to accomplish this the window must be opened from the bottom and a guard placed in front of the open space, so as to direct the air toward the upper part of the room.

Even in the coldest weather this may be done without any discomfort, provided the room be properly heated, and the heat should always be regulated with a view to proper ventilation.

A thermometer is indispensable if perfect ventilation and a normal temperature are desired. Nothing has a more depressing effect, or causes such a marked irritation of the nervous system, as an overheated, poorly ventilated room.

In reference to work at the chair, one should try to keep an erect position. If any one must assume an unnatural position, let it be the patient.

Manipulate the chair instead of the spinal column. Learn to work with the glass instead of crouching as if about to spring upon your prey. Avoid the patient's breath if possible. The adjustment of the rubber dam mitigates this evil. Do not hurry; do not worry; but do your

work calmly and deliberately. Allow your patient's excitability to increase your imperturbability. Nothing will deepen the furrow's in one's face or bring on physical wreck more quickly than fretting or worrying. Do not give appointments for trying operations during the later hours of the day, when you are all tired out, but try to arrange to have the easiest work come during the last two hours.

Use an antiseptic solution on your hands after washing them, as it is not safe to depend on soap and water. It has been thoroughly demonstrated that soap and water will not remove diseased germs from the hands, however carefully you may wash them. How frequently operators may be seen using their teeth as a receptacle for instruments while operating. Such instruments for instance as the mouth mirror, gold pluggers, foil carriers, etc.

The danger of this practice is apparent. We are too careless.

Carelessness frequently costs a man his life. Let us watch these points. Good men are scarce."

Crowning Front Teeth without Pins in the Root Canal, using only Band, Porcelain, and Downie Body at Back.

This demonstration consisted in preparing and fixing two crowns on the roots of two central incisors, using band only (without pin up the root canal), with porcelain front and Downie body at the back.

The success of this method depends on the special shaping of the root, the contouring of the band, and the Downie body at the back, thus producing a much stronger and more translucent tooth than with gold at the back.

In preparing the root the labial wall is ground down to the level of the gum, the enamel being chipped away beneath the gum with a fissure bur and enamel trimmer. The lingual wall is left intact, and as long as possible, taking into consideration the articulation of the lower teeth. The mesial and distal walls, instead of being cut parallel, are sloped towards the cutting edge of the tooth with a diamond disc. The band is finely fitted to the root in the mouth, having previously been fitted to a plaster model.

In fitting the band, the lingual side should be well contoured, so that the edge fits accurately the root beneath the gum, and does not press against the upper part of the enamel when letting the band forward over the labial wall. The band is driven beneath the gum by a strong foot plugger; thus owing to the mesial and distal side of the root sloping towards the crown, the higher the band is driven up, the tighter it grips the root.

The tooth is next adjusted and waxed into position, and then removed with the band and sunk in sand and plaster of Paris, a platinum diaphragm being soldered across, the pins being attached to it with pure gold. The soldering completed, the crown is removed from the sand and plaster, filled up at the back with Downie body, and cemented to the root. Specially prepared platinized gold (No. 4 gauge), should be used, as it withstands the heat necessary for fusing the Downie body.—G. O. WHITTAKER, *Jour. Brit. Assn.*

Putting a Porcelain Facing on a Living Honey-Combed Incisor.

The object of this operation is to improve the appearance of a honey-combed tooth without destroying the nerve.

In the case demonstrated the tooth was shortened as much as possible without cutting too near the pulp, as the tooth was found to be too frail towards the cutting edge to serve as a support for the porcelain face. (In cases where it is possible it is better to leave the palatal surface of the natural tooth entire, as a better support is given to the porcelain face and there is then less danger of fracture from pressure of the bite). The labial surface was ground flat down to a line or so below the level of the gum. During the grinding the tooth was isolated by the rubber dam and a stream of ethyl chloride was kept playing upon it, thus rendering the operation nearly painless. The natural tooth thus prepared presented a flat labial surface and a flat surface at the cutting edge. A plaster impression of the tooth was taken and cast with fusible metal. A good thick vulcanite tooth (Ash's make) of the right shade was selected, and the pins cut off and the tooth fitted to the metal model. The shoulder of the vulcanite tooth was fitted to the flat surface at the cutting edge of the natural tooth, the fine fitting being accomplished in the mouth. Two holes were next drilled in the natural tooth on the labial surface, one on either side of the pulp chamber, and in doing this the demonstrator pointed out that they must not be drilled through to the palatal surface. A very narrow strip of platinum plate (No. 4 or 5), less than 1-16th of an inch wide, was fitted so that an end dips into each hole. The mineral face was then smeared with wax, in order to ascertain where the groove was to be cut for the platinum to be fused into.

After the groove had been cut the bent platinum pin was held in its place in the groove by a trace of wax. The mineral face, with the pin waxed to it, was next placed on the natural tooth to obtain the exact position in the mouth. The face was then removed with the platinum still waxed to it and a low fusing body placed round the platinum, so

that when the body fused it filled up the groove and so fused the platinum pin securely into its place. The face, when baked, was cemented with the natural tooth with an osteo-plastic. Special care must be taken that there is no undue pressure from the bite, and it is also advisable to leave the cement several days until it is thoroughly hardened. The edges may then be finished off and polished, and the operation thus completed.—P. HEDRIDGE, *Jour. Brit. Asso.*

Sterilization of Hypodermic and other Syringes by Boiling.

We have hitherto been unable to sterilize injection syringes in which the pistons and washers are made of leather. This difficulty is now, however, happily overcome by Hoffmeister, of Tübingen, who in the *Centralblatt f. Chirurgie*, sets forth a method by which we may render these important instruments absolutely aseptic.

His procedure rests on the principle that leather may be boiled at will in plain water after previous hardening in a formalin solution. The plan is as follows:

1. Only such syringes may be sterilized as consist of glass, metal and leather. The metal parts must be united by solder or screws, rather than by cement.

2. The piston and washers are removed and freed from lubricating fat by ether.

3. They are then placed in a 2 to 4 per cent. formalin solution for twenty-four to forty-eight hours. (I have used the 4 per cent. formalin solution for twenty-four hours.)

4. After the formalin has been washed off, the syringe may be put together, and is then ready for boiling.

All air should be removed by working the piston back and forth while under water; the syringe may then be boiled at will in plain water (thirty minutes should suffice.)

Applying Gold Bandages.

The gold bandage is designed for the preservation of frail, badly decayed teeth in the anterior part of the mouth, which do not promise well under ordinary methods of filling. The cavities are first filled with oxy-phosphate. The bandage is made of pure gold plate, No. 32, which is wrapped around the tooth and the ends united by pressing them into a slot, which has been cut in the labial surface of the tooth, and into which a gold filling is afterwards packed.

The slot is made about one-eighth of an inch long in a vertical direction, starting slightly beneath the margin of the gum. The bandage also extends just under the free margin.

It is cut away so as to show only a narrow band of gold upon the labial surface, while the proximal and palatal or lingual surfaces are entirely covered, in the case of bicuspid, and properly shaped flaps are left at the proximal sides (supposing the tooth to be decayed through the crown), which are folded over the articulating surface and anchored in the fissure with a gold filling.

Before the bandage is applied, its inner surface is smeared with a thin coating of cement, and the gold is carefully burnished to the tooth while the cement is still soft.

This treatment is admirably adapted for the teeth of elderly people, where the gums have receded and the exposed parts have become softened. The diseased portion is scraped off, the surface dressed down with coarse polishing strips, wiped over with a strong solution of nitrate of silver, and the bandage applied.—J. F. ADAMS, in *Items*.

Adenitis of the Neck and Carious Teeth.

A German surgeon, Dr. Starck, (*Beitrag zur Chirurgie*, xvi, 1; *Centralblatt für Chirurgie*, August 22, 1896), has been looking into the matter of the connection between simple and tuberculous chronic cervical adenitis and carious teeth. With reference to this point, he has examined upward of a hundred children between three and twelve years old. Excluding all cases in which any other possible cause could be assigned for the glandular swellings, such as an hereditary tuberculosis tendency, recent attacks of measles, scarlet fever, diphtheria, or angina, and the like, he has found that in forty-one per cent. of the children affected with chronic cervical adenitis no other cause could be recognized than dental caries.

Carious teeth, then, are to be set down as among the commonest avenues of infection in children, along with tonsillar tuberculosis. In five cases, of which the histories are given, unilateral tuberculosis of the submaxillary glands developed in immediate connection with toothache. In one of these cases two carious teeth were extracted, and tubercle bacilli came with them. In only one case was the tissue between the roots of the teeth found to be tuberculous.

Dr. Stark draws a practical lesson from his observations to the effect that surgeons should make it a rule, whenever they operate for tuberculous glands of the neck, to extract any carious teeth that may be pres-

ent, since otherwise they may prove a source of relapse. Moreover, it follows from the importance of carious teeth as points of entrance for infection, especially in children, that endeavors to make adequate care of the teeth and mouth obligatory in schools should have the zealous aid of physicians.—*N. Y. Med. Journal.*

How to Recognize Eye Strain.

Patients suffering from eye strain frequently have headache, the pain being located in the eye-balls and in the frontal region.

Headache from nasal disease is more likely to be in the morning on awakening, while headache from eye strain comes on later in the day, after having used the eyes.

Symptoms of irritation of the eye is an indication of eye strain ; the patient complains of burning, itching, and frequently of watering of the eyes, having used them for some close work, such as reading or sewing. Recurring styes and chalagions, if not clearly traced to some general dyscrasia, are almost always due to eye strain. In persons between the ages of forty and fifty, drawing in the eyes, lids running together, inability to use the eyes at night, are the first symptoms of presbyopia, commonly called old sight.—*Eclectic Med. Monthly.*

Inlaying Teeth with Gold.

A most difficult class of cavities include those in the approximal surface, where the corner has been lost and the upper margin is near or quite up to the gum margin. The difficulty of inserting perfect gold fillings in frail teeth having such extensive cavities has led me to adopt the following method : I take a piece of gold foil, No. 50, and burnish gently in the cavity, trimming the edges of the foil flush with the surface of the tooth, then bend over the cavity and foil a piece of pure gold about 30 to 32 guage, and trim this so that it will slightly overlap the outer edges of the cavity on all sides. Take this to the laboratory and flow 22 carat solder to fill the space between the two pieces. Insert this, burnishing the edges to fit the cavity margin. To retain it in position use oxyphosphate, mixed thin, flowed over the cavity, and insert the solid plug while still soft. At a subsequent sitting it may be polished as an ordinary filling.—V. R. HOBSON, in *Items.*

Too Much Undercut.

The great majority of practitioners cut too deep and undercut the retaining points to hold the filling. They are always afraid the filling is going to tumble out. They are thinking, "Well, I have had a failure, and I will cut this a little deeper." By the time they are through with it and have prepared it to their own satisfaction, it is in what we in our parlance in the office have called, an egg-shell. They have undermined all sides, and have simply left a thin shell of enamel, that is as frail as can be to support the filling. The result is that when the filling is inserted in a very short time the margins of the enamel break down and out comes the filling, just what the operator tried to avoid.—B. G. MAERCKLEIN, *Dental Review*.

BRIEFS.

Chlorate of Potash, internally and externally, has been used successfully in tumors of the mouth and gums.—*Lancet Clinic*.

Three Companions.—There are three companions with whom you should keep on good terms,—your wife, your stomach and your conscience.

Strychnine vs. Chloroform.—There is no antagonist so valuable as strychnine in full doses, and on the slightest sign of cardiac or respiratory failure.

To Lengthen a Tooth.—Dr. Herd solders a small piece of platinum to the lower pin, bends it under the tooth to support the Downie body, fills in body to shape required and bakes.

Cause of Shrinkage in Amalgam.—Most of the shrinkage of amalgams made from alloys in the market is due to the conditions to which they are exposed after cutting.—*G. V. Black, Items*.

Treatment of Sensitiveness at Neck of Tooth.—Silico flouride sod. saturated solution and boric acid saturated solution; inject around roots when root or neck is sensitive.—*Dental Review*.

To Clean the Mouth-Mirror.—Dr. Tileston turns up the edge of the frame, removes the glass, boils the frame in water, 2% soda, resets glass in frame with paraffine and burnishes upturned edge of frame back against the glass.—*From Dental Digest*.

Care in Using Broaches.—In using a barbed broach we cannot be too careful, especially when we rotate it in the canal, as it is liable to break and a portion of it be left in the canal, which at times is very difficult to remove.—*W. H. Kiser, Dental Digest.*

To Destroy Taste for Tobacco.—Galangal root is used to destroy taste for tobacco. A morsel placed in the mouth causes a flow of saliva and a gentle warmth is imparted to the mucous membrane which is very grateful to the habitual tobacco user.—*Dental Review.*

Teeth Best Suited for Porcelain Inlays.—The question as to what cavities are particularly suitable for porcelain and glass fillings I must answer as follows: Fillings of the kinds mentioned are suitable for visible defects in the incisors, cuspids, and (possibly) bicuspid. —*E. Forberg, International.*

Candy and the Teeth.—I have noticed where children are allowed to eat all the candy they wish and are compelled to brush the teeth it is seldom injurious. I think you will find in the majority of cases where the teeth are bad it is more due to the neglect of the teeth than to sweets.—*Dr. Manhard, Review.*

Strain on Anterior Bridges.—In the loss of anterior teeth the bridge piers are subjected to a lateral strain in biting hard substances that often makes them a failure. Great judgment must be used in constructing such dentures that there be *no occlusion* of the lower teeth.—*W. H. Steele, Dental Digest.*

Silico Fluoride of Mercury as an Antiseptic.—Hallion, Lefranc and Poupinel have found (*Rep. de Phaem.*) that this substance is an excellent antiseptic, acting with twice the energy of corrosive sublimate and at the same time is much less toxic than the chloride. Aqueous solutions of one to a thousand are recommended.

How Long will Porcelain Inlays Last?—As regards the question how long a time these fillings will last, it depends upon three factors, viz., (1) the condition of the cavity, (2) the degree of thinness to which one has succeeded in reducing the cement layer, and (3) the amount of attention the patient gives to his mouth.—*E. Forberg in International.*

Shrinkage not Due to Oxidation.—The theory that the shrinkage of alloys is due to oxidation has been completely disproved by my own results. Alloys come to shrink just the same when put in pure hydrogen, nitrogen, oxygen, chemically dried air, chloroform, rigoline, and in a number of other ways calculated to prevent oxidation.—*G. V. Black, Items.*

The Right Way.—Let each and every one of us pledge to ourselves that every operation we are called upon to perform shall be executed to the very best of our ability. We should read our dental journals regularly; we should keep in touch with our profession in every possible way, and try to make it more dignified with each year.—*A. F. Merryman, Stom. Gazette.*

Electric Lamp in Diagnosing a Dead Pulp.—When the light is made to pass through a tooth with a dead pulp, the tooth will appear opaque; if the pulp is alive, it will be clear. Reflecting light from a mirror outside the mouth upon a mirror inside and from this back through the tooth, will answer almost as well as the electric lamp for the purpose. *T. S. Waters, Cosmos.*

Dentistry in Johannesburg.—*The Scottish Highlander* is recommending his canny dental brethren to go to Johannesburg. Five pounds for a gold filling, and a cheap set of teeth for sixteen times that sum would be an inducement to a good many, in, as well as out of Scotland, if it were not for the fact that everyday expenses are in much the same ratio.—*British Journal.*

Sensitive Dentine.—When your patients come to you with teeth far more sensitive one day than another it is because of acid-taking, in form of lemon, pickle, vinegar or other foods. During your period of operating have them abstain, and recommend alkaline lotions to neutralize acids and destroy the sensitiveness by converting the exposed organic tissue into soap.—*Dr. Chisholm, Review.*

An Absorbent Combination.—At one time I used rolls of bibulous paper, then absorbent cotton, and finally they have been combined. The cotton, being enveloped in the paper, is highly absorptive, while the size of the pad can be enlarged or decreased at will. When placed over the mouth of the glands it serves all the purposes of the napkin, without being so bulky.—*Jos. Head, International.*

Perfume in Anesthetics.—To a person unfamiliar with the odor of chloroform or ether I have used a strong and pleasant perfume, gradually substituting the anesthetic accompanying some deceptive explanation. From a record kept, nine out of ten patients so anesthetized, the sensations were of beautiful gardens, intoxicating odors and pleasant sensations.—*Dr. Churchman, Dental Review.*

Maxillary Sinus and Dental Disease.—The longer I give close attention to the study of the maxillary sinus and its dental diseases, the more I am convinced that the average dentist often overlooks grave com-

plications which arise in the treatment of the first, second or third superior molars, on account of the close contiguity of the maxillary sinus to the apices of the roots of these teeth.—*J. D. Patterson, Western Journal.*

The Removal of the Odor of Iodoform.—All persons who have occasion to handle iodoform know how tenacious and resisting the odor of this antiseptic is to all rinsings. The essence of terebenthine immediately removes the odor from hands which have touched iodoform, and also from spatulas or vases which have come in contact with it. A washing with terebenthinized water, then with soapy water, is very efficacious.—*L'Odontologie.*

Cocaine Hydrochloride Incompatible with Iodol.—Von Sztankay has observed, *Pharm. Post*, that on triturating hydrochloride with iodol in the presence of water a decidedly fragrant odor is evolved, resembling that of lilacs and hyacinths. Upon mixing the substances with lanolin or upon heating the odor disappears. The evolution of the odor undoubtedly indicates that a chemical change of some sort takes place, but its nature has not yet been investigated.

Objectionable Features of Bridge-Work.—Among the most objectionable features of bridge-work are the necessity of mutilating good healthy teeth to adjust bands, etc.; the unsightly appearance and impracticability of bands and open-face caps on the anterior teeth; the expense and difficulty of repairing; the tendency to drag out and destroy the teeth to which the piece is anchored; and last but not least, the unhygienic and disease-breeding feature.—*W. H. Steele, Dental Digest.*

Treatment of Fetid Breath.—Besides disinfection by means of the classic solution of permanganate of potash (10%), of which five to eight drops are employed for gargling, the *Revue de Therapeutique* indicates the employment of an infusion of sage-leaves, or of a decoction of camomile-leaves, with an addition of chloruretted water in the proportion of about 5%. It is diluted with glycerine, and aromatized with a few drops of tincture of myrrh and of lavender. The whole is employed in gargles.—*L'Odontologie.*

Vinegar as an Antidote to Carbolic Acid.—Applied to the skin or mucous membrane burnt by carbolic acid, vinegar causes a rapid disappearance of the characteristic whiteness as well as the numbness produced by the acid; it also prevents the formation of a slough. Vinegar also neutralizes carbolic acid introduced into the stomach. In cases where carbolic acid has been swallowed, therefore, Professor Carleton suggests, the patient should be made to drink vinegar diluted with an

equal quantity of water, and the stomach should then be washed out.—*Med. Practitioner.*

New Formula for Local Anesthetic.—The formula given below is claimed to be an efficient local anesthetic, and is original with Dr. W. D. Dalrymple, Ogden, Utah :

℞ Cocaine hydrochlorate, grs. ii ;
Carbolic acid, gtts. x ;
Glycerine. ʒ i ;
Listerine, ʒ i ;
Aqua dest., ad. q. s., ʒ ii.—M.—*International.*

To Allay Sensitiveness of Dentine.—Dry the tooth thoroughly by the use of a hot air syringe, attached to a hot air apparatus, then apply a saline solution of cocain, which is absorbed in the tubuli of the tooth. Upon the application of the electrical current you obtain an anesthetic condition more quickly than if applied previous to dehydration of the dentine and the absorption of the medicine. Now we have, as is supposed, a local anesthetic condition ; although the touch of an excavator causes no pain, yet the rapid cutting of the bur, which produces heat, is very excruciating, for a tooth placed in a cataphoric condition is very sensitive to thermal changes.—*S. Freeman, Items.*

Root Filling Material.—I wish to say just one word in regard to the material used for filling roots, and that is that it makes very little difference what it is so long as it is an antiseptic, easily handled and, as Dr. Flagg says, readily removed. For that purpose I have used for a little over a year and a half, paraffine and iodoform, melting it into the cavity with a copper wire made in the form of the Donaldson broaches ; the preparation is carried to the end of the roots by capillary action, and afterward, by simply pressing cotton upon it, the filling will come away intact, showing the shape of the root canal. To me this has been one of the most satisfactory fillings that I have used in my practice.—*F. T. Van Woert, Items.*

Consideration of Temperament in Treating Teeth.—I think, as a rule, dentists do not pay attention enough to the treatment of teeth in connection with the temperament of the person. If we observe, we will see that a person of bilious temperament can be treated with less care in performing operations without inconvenience to the patient ; that is to say, if you take a person of bilious temperament, his tooth might be treated and no particular care taken of the filling of the canals—you might fill them with wax or wire, and not take so much care with them as you would with a person of nervous temperament. You fill the tooth

of the person of nervous temperament as carefully as it can be filled, and it will give trouble.—*J. E. Stevens, Western Journal.*

Sodium Chloride in the Nasal Cavity.—Dr. Kapp recommends the insufflation, through an ordinary insufflator or other appropriate tube, of from 2 to 4 grains of pulverized table salt, as a measure tending to give immediate relief in facial pain or headaches arising from trifacial irritation from decayed teeth, eye strain, or other causes, such as ear affections, hysteria. The measure was first applied, according to the author, by Leslie, and published in the *Edinburgh Medical Journal*, Jan., 1890. The latter had successfully employed it in the treatment of obstinate and long standing cases, as well as in acute neuralgia, headache, faceache, earache, toothache, and bronchial asthma. The application causes about the same temporary discomfort as would a pinch of snuff, but is not followed by bad results, and is usually successful.—*Med. Times.*

EDITOR'S NOTES.

Retrospective.

It is seldom that we speak of ourselves, but in looking over the pages of this volume one must be impressed with the number of valuable articles it contains, in all exceeding five hundred exclusive of society notices, book reviews, aftermath, etc. The original contributions number one hundred and thirty and have been written by some of the foremost dentists in the country. In the *All Sorts* department we have given, in condensed form, the best thoughts that have appeared in the dental journals throughout the world, thus keeping our subscribers well informed on the progress dentistry is making.

We appreciate the many words of praise that have been spoken for the JOURNAL and we feel that we owe much to the dentists who have so kindly aided us with their original contributions; to them we extend our sincere thanks for their kind assistance.

The coming, 1897 volume of the OHIO DENTAL JOURNAL will contain many valuable original contributions by noted men who have already promised to write for its pages.

The JOURNAL will be continued on the same lines as the vol-

ume of '96, for we believe that with such a variety of topics every dentist must find things in each number that are of especial interest to him. Our aim shall at all times be to condense all articles as much as we can without destroying the thought conveyed.

During the year just closing we have received as many again new subscribers as in any other one year and hope the JOURNAL will merit not only the continuance of all of these, but an increased number of other dentists.

Thanking all of our subscribers for their past favors and wishing one and all a Merry Christmas and prosperous New Year we leave the future of the JOURNAL for their kind consideration.

New Publications.

PRACTICAL DENTAL METALLURGY. A Text and Reference Book for Students and Practitioners of Dentistry. Embodying the Principles of Metallurgy, and their Application to Dentistry, including an Addendum of Collateral Literature, with Examples. By Joseph Dupuy Hodgen, D.D.S, Assistant to the Chair of Dental Chemistry and Metallurgy, University of California, College of Dentistry; late editor of the Pacific Coast Dentist.

Published by the Hicks-Judd Co., San Francisco; is the title of a twelve mo. volume of three hundred and fourteen pages, recently published.

The arrangement of the work is similar to the well known works of Professors Essig and Kirk, with some omissions and many additions. The chapter upon Amalgam is especially valuable. It contains the essence of Professor G. V. Black's exhaustive articles published in the *Dental Cosmos*. The chapter upon Melting Metals, is made very valuable by a short concise description of the flame. Throughout the text, is given directions for performing seventy-eight experiments, suitable for students' laboratory work. The Addendum gives reference to helpful articles in the works of Brannt, Essig, Fletcher, Kirk, Makins, Gore, Mitchell and Flagg; and the *Dental Cosmos*, *Dental Review* and *International Dental Journal*.

We regret to see in the table of fusibilities such a variation

from the accepted authorities in our schools, without a reason being given for the change. It only tends to confuse the mind of the student. We also regret the omission of the newer steels, we should have more knowledge of their composition and working properties, rather than less.

Taking the book as a whole, it is most creditable and deserves a place as a working book in the library of every student of dentistry.

G. H. W.

OUR AFTERMATH.

WILL WINTER IN FLORIDA.—From the *Journal für Zahnheilkunde* we learn that W. D. Müller, of Berlin, sailed Oct. 8th for New York with the intention of spending the winter in Florida, hoping the change will benefit his health.

DENTAL SOCIETY OF AMERICAN GRADUATES.—According to *L'Odontologie* the dentists of Berlin, Ger., who are graduates of American Dental colleges, met recently and decided to form a dental society, among themselves, in that city.

DENTAL INSPECTORS FOR SCHOOLS.—We notice in the *Medical Mirror* that the Ontario Board of Health recently adopted the following resolution: "That dental inspectors be appointed by local boards of school trustees to periodically visit schools and examine children's teeth, and that a dental hospital be started in Toronto for the benefit of poor children; and these recommendations be urged upon the attention of the Minister of Education."

HOW HE ASKED GRACE.—A commercial traveler, purported to be traveling for a dental supply house, who was taking a vacation with his uncle in the country, says an exchange, was suddenly called on to say grace, and, not being accustomed to it, promptly tackled the difficulty in the following words: "We acknowledge the receipt of your favor of this date. Allow us to express our gratitude for this expression of good will. Trusting that our house may merit your confidence and that we may have many orders from you this fall, we are yours"

MEN TO AVOID.—The one who has acute exacerbations of insanity when exposed to any new fad. The one who is always successful with all his difficult operations. The one who always sees hundreds of cases of a rare disease. The one who can always match your case and improve on your treatment. The one who always finds you have omitted something in the examination of your case. The one who thinks he can talk well, and is always ready to discuss any paper of the evening. The one who is always the first to do the new operation. The one who is in a chronic fear of being anticipated in his important discoveries. The one who in consultation feels it his conscientious duty to explain to the patient why he differs with the attending physician.—*Medical Record.*

